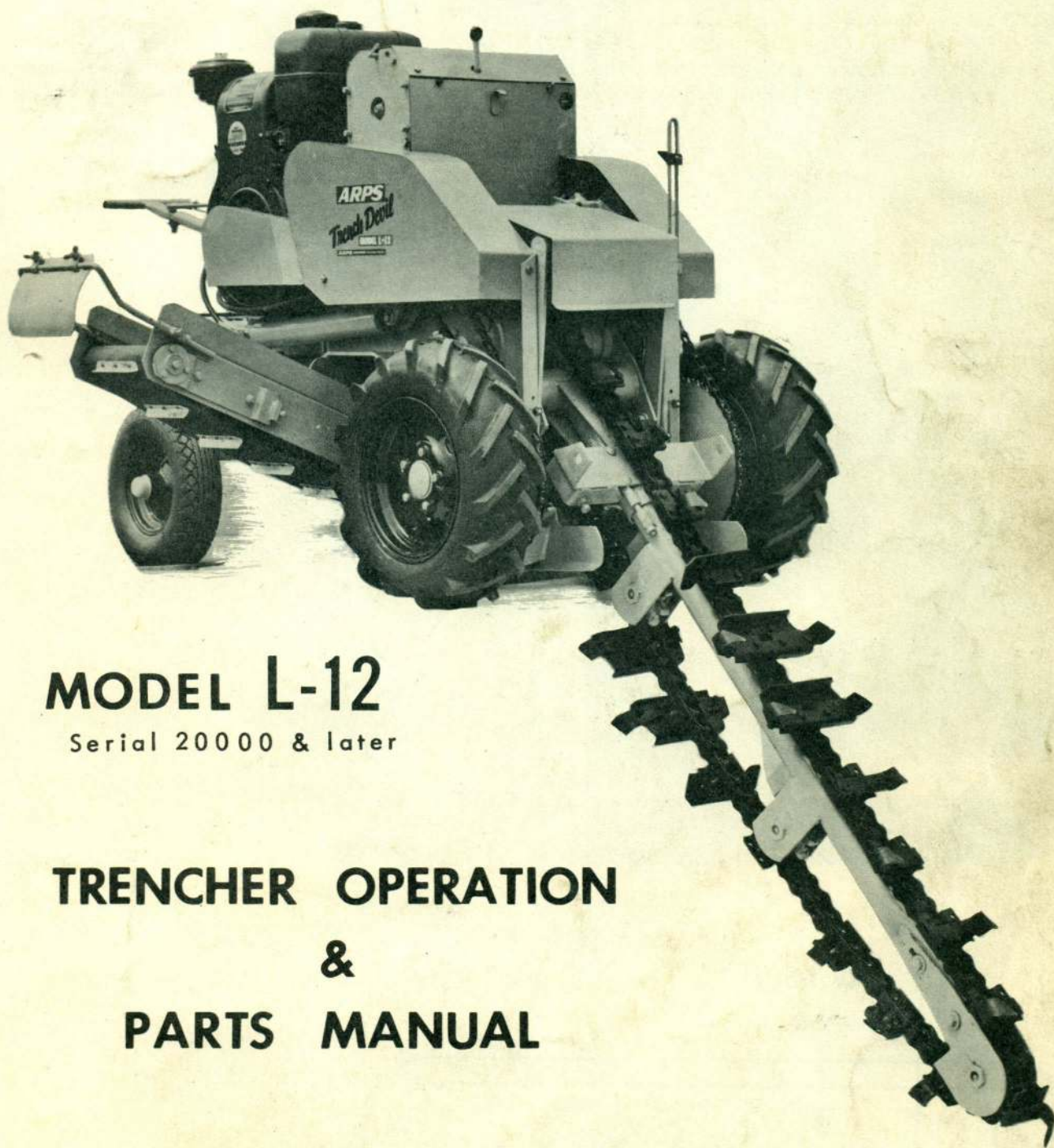


the

ARPS

TRENCH-DEVIL



MODEL L-12

Serial 20000 & later

**TRENCHER OPERATION
&
PARTS MANUAL**

ARPS CORPORATION, New Holstein, Wisconsin

Litho in U.S.A.

ASSEMBLY & OPERATION OF THE TRENCHER

Use these instructions in conjunction with the tags
found wired to various points of the machine



FIGURE 1

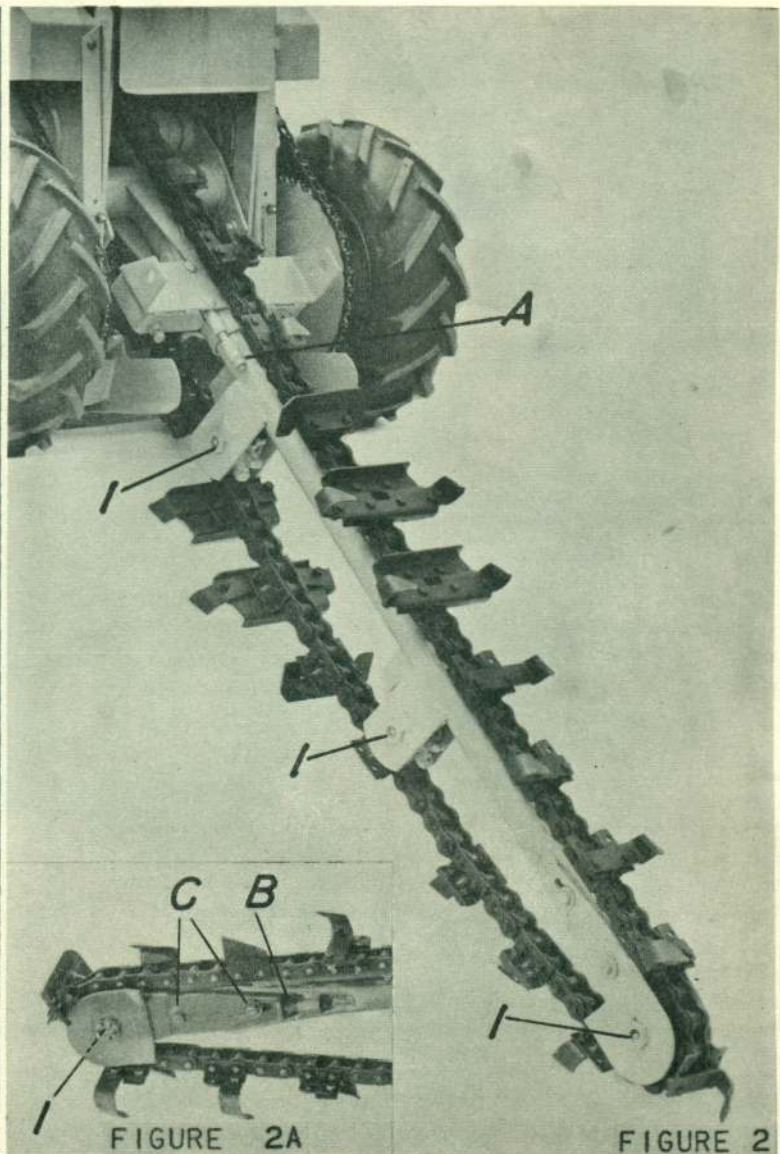


FIGURE 2A

FIGURE 2

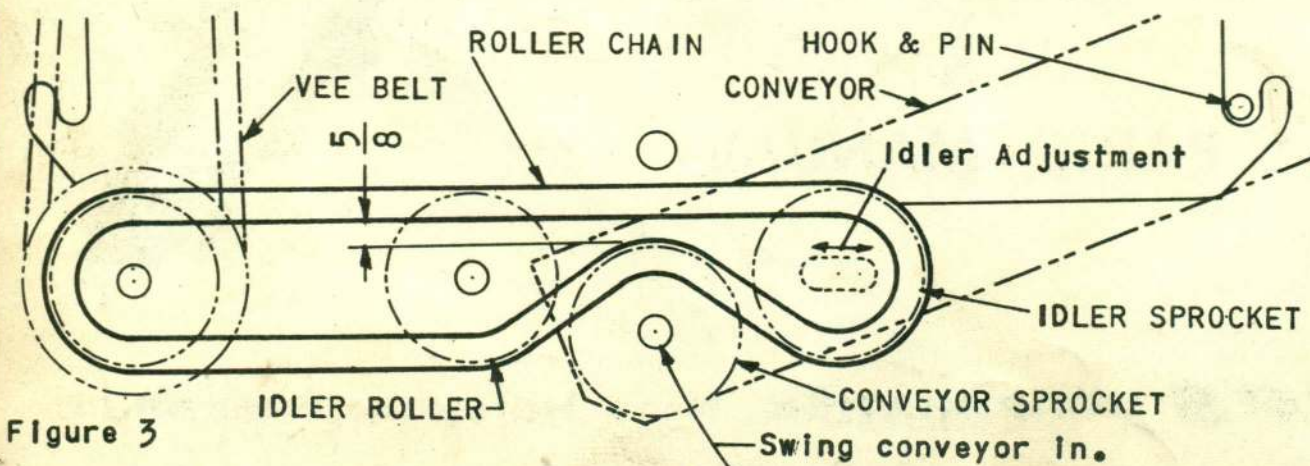


Figure 3

ASSEMBLY

1. Insert boom into boom socket as shown in Figure 2 with the roller sprocket to the bottom. Rotate boom back and forth slightly until you feel it seat itself solidly in the socket and aligns itself so that the sprockets are perfectly upright. Bolt securely at (A) with bolts having self-locking nuts.
2. Install the cutter chain, making sure that cutting edge is to the front on the bottom segment of chain.
3. Install the cutters on the chain in accordance with the Cutter Charts found several pages farther on in this book. Be sure the sharpened or leading edges of the cutters are facing toward the machine on the bottom side of boom.
4. Tighten chain by loosening bolts (C) and turning set screw (B) outward until only a slight sag remains in the chain. Tighten lock nut on set screw and also bolts (C).
5. The conveyor may be set into the machine from either side and can be quickly changed to the opposite side as the need arises. Figure 1 will show how the conveyor is placed into one of its openings in the machine. Note that a pin and hook method is used to support the conveyor. As the conveyor is hung in place, the lower end will swing up so that one of the sprockets on the conveyor will engage a roller chain from the bottom.

The proper engagement of the sprocket and the chain is very important. Figure 3 illustrates the drive. Note that the roller chain must be adjusted initially so that the two strands of chain clear each other by $5/8$ inch when the conveyor is in place. This is done by adjusting the Idler Sprocket.

When the conveyor is in place, go around to the opposite side. See Figure 5 and adjust bracket (D) so that the conveyor may be locked in place by pin (E) and hairpin cotter (F). Note - When you adjust bracket (D), position it so that the conveyor sprocket does not rest against the drive chain with excessive force, but all or nearly all slack is removed from the chain. Also, be sure that the hopper extension plate (KK) is in place as shown.

At this time it would be well to repeat this procedure putting the conveyor into the machine from the opposite side. Only second bracket (D-1) on Figure 5 needs to be adjusted for proper chain engagement. When this is done, the conveyor may be changed from side to side without any further adjustments. IMPORTANT - Keep chain adjusted to $5/8$ inch clearance dimension so that conveyor sprocket maintains proper engagement. Do not allow any excess slack to develop in drive or unsatisfactory operation will occur.

6. Refer to Figure 4A and install the deflector flap assembly (G) as seen there. Wing screws (H) lock it to the conveyor frame and wing nuts (I) lock the flap to the desired angle for proper placement of the spoil pile as various job conditions are encountered.
7. To install the trench side spill guards (J), refer to Figure 4B. The long pin of each guard is inserted into a hole found at (K) on each side of the mud box of the machine. The pin is secured on the opposite side by a hairpin cotter. Hook bar (L) is used to hold the guards up for transport and to prevent the guards from rising when in digging position.

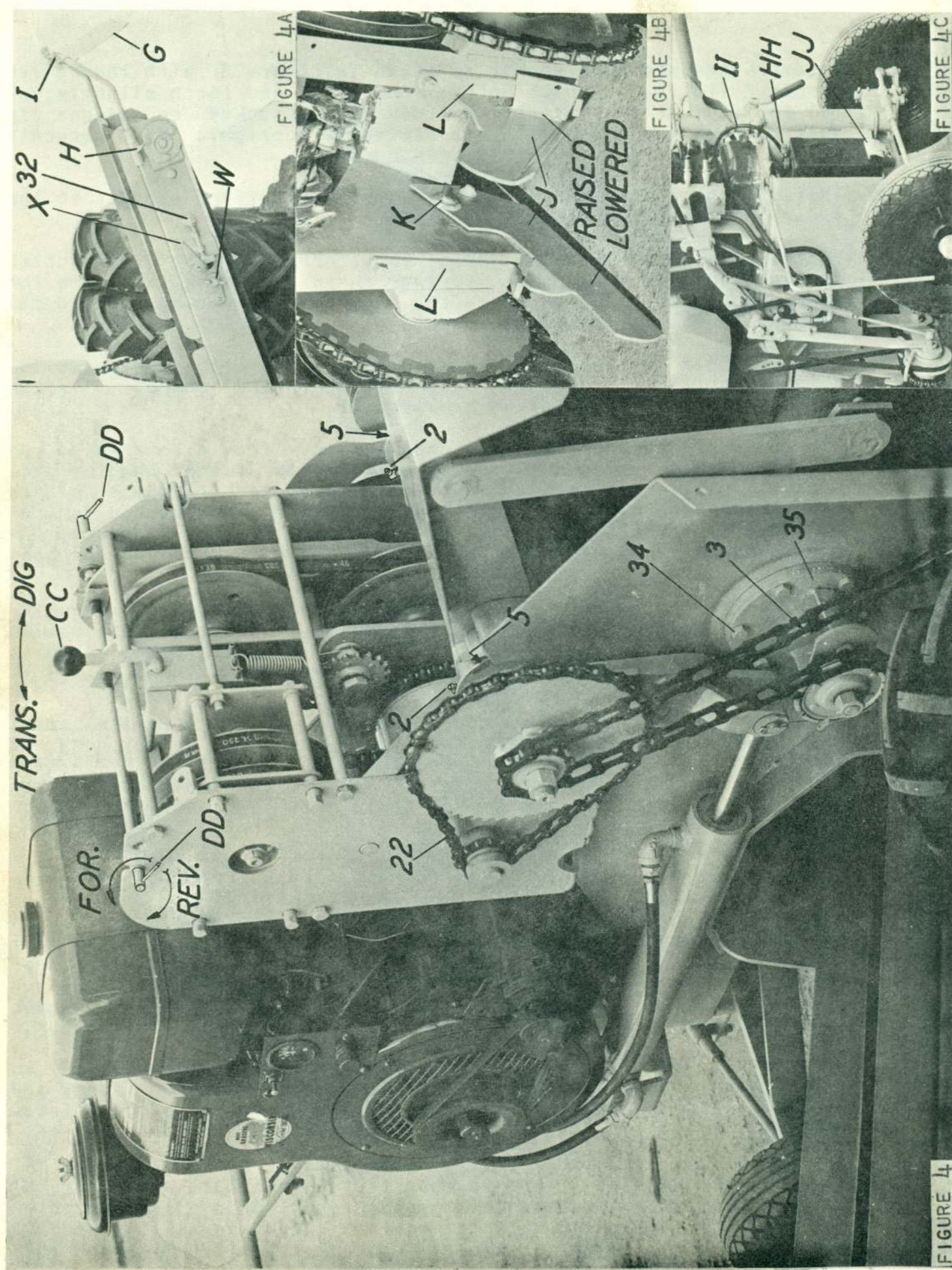


FIGURE 4A

FIGURE 4B

FIGURE 4C

FIGURE 4

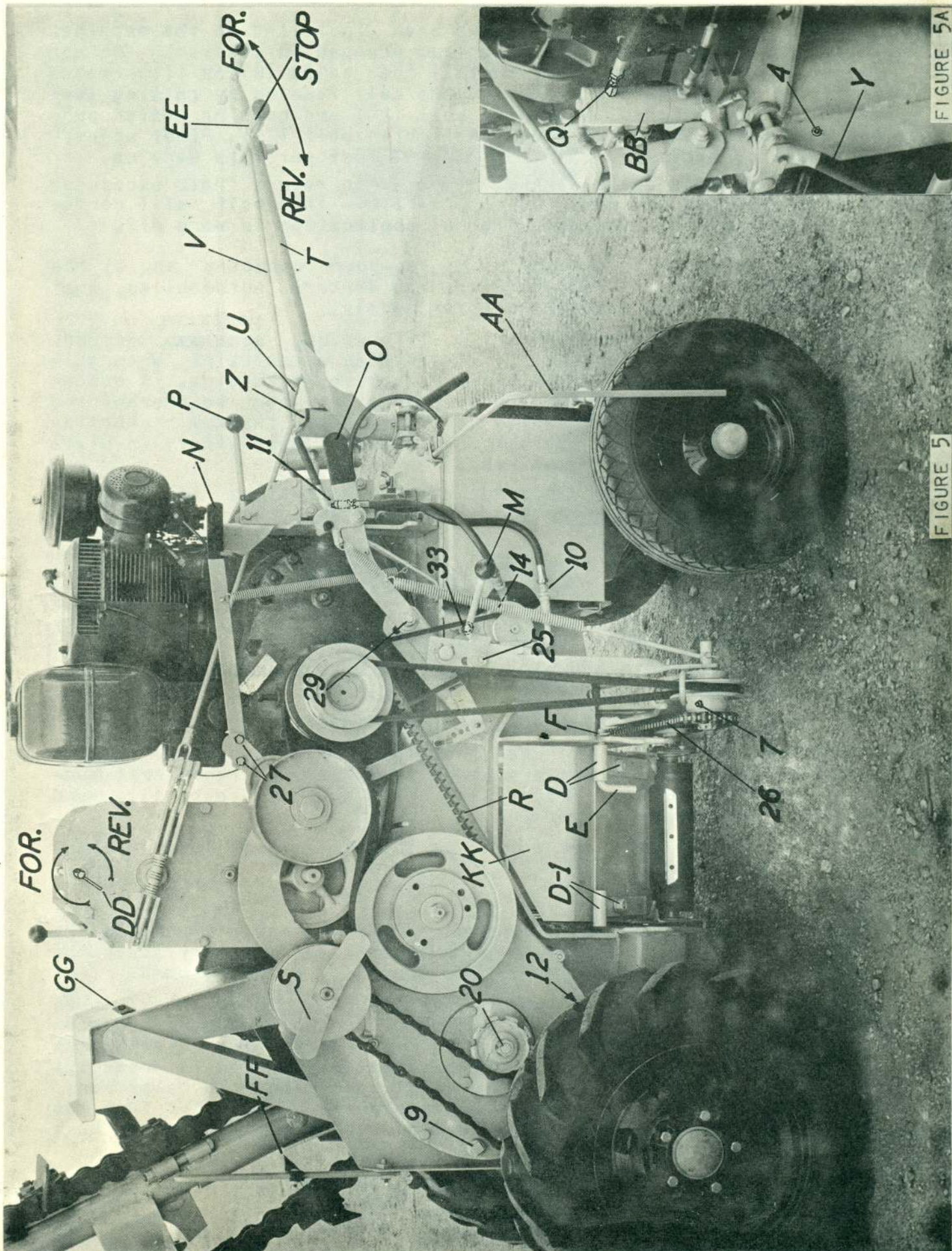


FIGURE 5

FIGURE 5A

8. The main drive belts may not have been installed on the machine. They are treated with tire talc and wrapped in plastic. Do not remove the talc coating but install the belts (R) as illustrated in Figure 5. Temporarily adjust the belt tension by raising lever (O) until latched, loosening bolt (29) and pushing idler pulley down until belts are snug. Retighten bolt (29). Final adjustment will be necessary when machine is first put into service.

IMPORTANT - These belts were talc coated to reduce their excessive grip while fresh and new. Do not re-talc - this belt will condition itself by the time the original application is worn off.

9. A 12-volt automotive battery of 45 Amp-hour capacity and of the type that is used in 1956-59 Ford and Mercury automobiles, must be installed on the Electric Starter models.

Hook up battery cables (HH & II), Figure 4C, ^{positive} ~~negative~~ ground, noting that the ground cable will serve as a restraint when pulling the battery out of the battery box for servicing. A wooden guide rail is found at the top of the battery box to prevent the battery from tipping up while servicing and, thereby, shorting the positive connection against the frame. Clamp battery in place with clips (JJ) at front and rear.

NOTE - Ammeter may show discharge when in operation; if so, refer to Engine Manual and interchange ammeter and coil leads as directed.

OPERATION

Refer to Figures 4 and 5 unless told otherwise.

1. Fill engine crankcase and air cleaner with recommended oil. (See engine instruction manual.)
2. Fill fuel tank with good grade of regular gasoline.
3. Before starting engine be sure that V-Belt tighteners are in non-operating position. There are three such V-Belt tighteners; conveyor V-Belt tightener (M), wheel drive control lever (N), and digging chain control lever (O).
4. Raise Handle (T) and lock with Hook (U). Also hook Rod (V) into hole in Lever (Z).
5. Start engine.
6. Unhook the spill guards (J), Figure 4B, and lower them to the ground. They will normally support themselves slightly above the ground level and will ride over any unevenness of the ground.
7. Lower the boom about half way to the ground. To do this, move the valve lever (P) downward. The boom should move downward rapidly, but not fall freely. Fitting (Q) contains a restriction element which prevents this. When desired position is reached, allow handle to spring back to neutral position. To raise boom, lift up on the handle. Should this procedure be reversed from the above described manner, simply reverse hydraulic cylinder hose lines at the shuttle valve (BB).
8. Move conveyor V-Belt tightener (M) down to start conveyor.
9. Raise digging chain control lever (O) until latched to start digging chain.

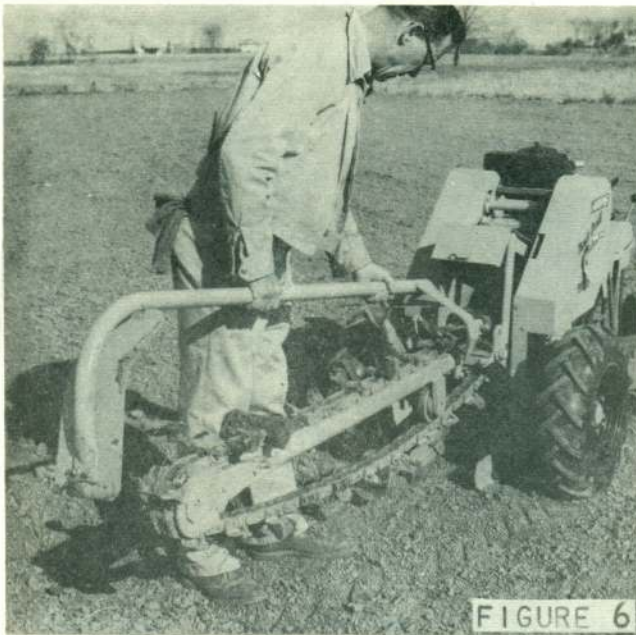


FIGURE 6

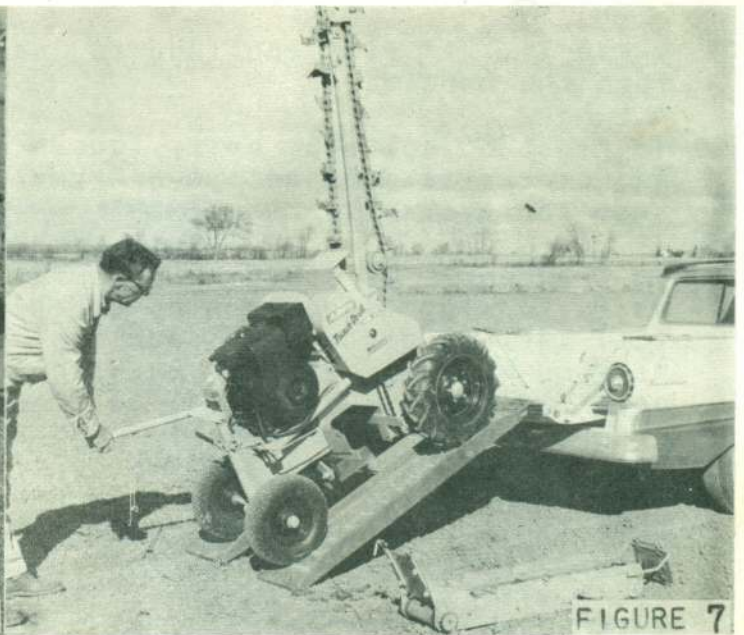


FIGURE 7

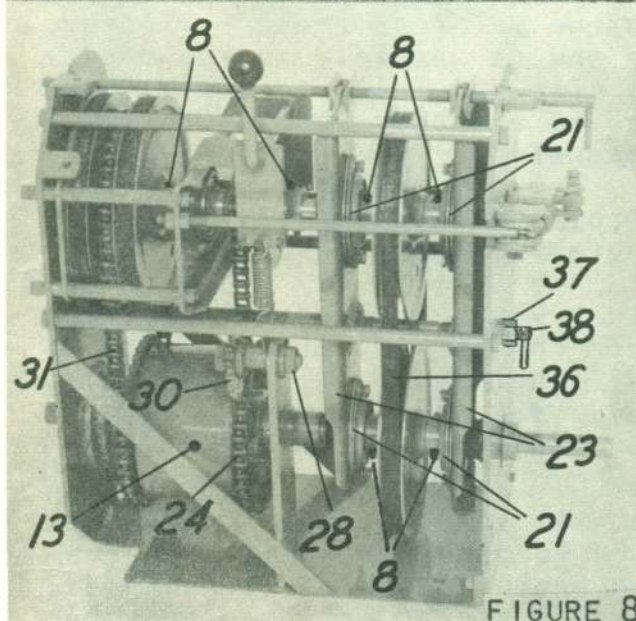


FIGURE 8

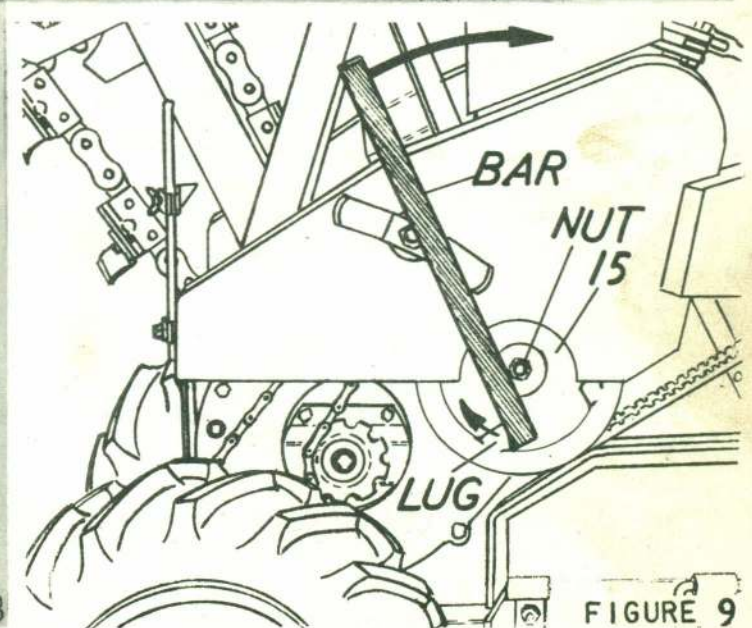


FIGURE 9

10. Leave handle (N), Figure 5, in the raised position. For digging speed range, rock knob (CC), Figure 4, all the way to right (approximately $\frac{1}{2}$ " of travel), rocking the machine slightly forward and backward if necessary, to engage the shift coupling. Knob and handle will return to center when released.
11. Tighten wheel drive friction clutch by tightening large wing nut (S) when machine is set to dig. The loosening of this element permits easier steering when machine is moved in transport drive or maneuvered into digging position.
12. Lower wheel drive control lever (N).
13. Direction and digging speed are controlled by speed control Tee Handle (DD) which is found on both sides of the machine. The unit must be running before attempting to turn this handle. Turning the handle "forward" will cause the machine to move forward and at an increasing speed as you continue to turn it. Turning the handle "backwards" now will stop the machine and re-

verse it. It will continue to increase its reverse speed as you turn the handle.

14. To tighten conveyor belt, loosen wing nut (W) and turn tightener (X) clockwise. Do not over-tension. Keep only tight enough to keep conveyor belt running.
15. To transport at speed under its own power, release all drive belts to stop digger chain, conveyor, and wheel drive. Rock knob (CC) left to disengage coupling. If considerable turning will be encountered, release wheel drive clutch wing nut (S). Raise boom and spill guards (J) to transport position. Throttle engine down to approximately one-third speed. Lower handle (N) to start drive. The machine will not move. The direction lever (EE) when pulled forward will cause the machine to move forward. When it is released the machine will stop. When the lever is pushed backward, the machine will move backward. Releasing it again will stop the machine. NOTE: The machine's ability to move over rough terrain, etc., is directly proportioned to effort applied to lever (EE), up to the point of wheel slippage. You may reverse direction as often and as rapidly as you desire when maneuvering the machine. Any time you fail to apply force to lever (EE), the machine will come to a stop. This is intended as a safety measure for you - the operator.
16. Practice manipulating all the controls to thoroughly familiarize yourself with them before attempting a trenching job.
17. After familiarity with the controls, you are ready to attempt your first trenching job. Maneuver the machine in position at transport speed. Stop drive by lifting lever (N). Shift knob (CC), (see preceding paragraph 10), **to the right.** Tighten wheel drive wing nut (S). Lower boom almost to the ground.

NOTE - When you attempt to dig, you will have to adjust the main drive belts for the correct tension to properly handle the machine, but yet slip when the digging chain is stalled or snagged. The slippage should be so controlled by proper belt tension that the engine is stalled gradually, giving the operator time to reach and release lever (O) before the engine quits. This final adjustment should be made by trial when you are actually at the digging site.

After the boom is down to desired depth, start turning the speed control tee handle forward until the engine begins to labor. The throttle may be fully advanced for digging. The front wheels may be locked in a straight ahead position for straight line trenching or in a turned position for digging in a curve. This is done by clamping the spindle at (Y).

When a stone jams the machine or the digger chain is badly snagged, it usually helps to turn the digger chain backwards for freeing. To do this, provide yourself with an iron bar, about 3/8" x 1" x 3 ft. long, and use it to turn pulley (15), Fig. 9, backward as shown. Four lugs are provided in the rim of pulley for this purpose.

The flap at end of conveyor is used to deflect the dirt when digging. It may be set to throw the dirt closer or farther from the machine; or removed as your digging condition requires.

A depth marker is provided, (FF), which may be set in line with the pointer (GG) when the boom has reached the desired digging depth. After you have raised the boom to clear an obstruction, lower the boom until the pointer and marker align. You are then back to the desired depth.

Automotive type steering is provided for greater steering ease and control. Keep wheels in reasonable adjustment. A small amount of toe-in is beneficial and the steering handle should be kept adjusted straight ahead with the wheels.

Under adverse traction conditions, wheel weights (100 lbs./pr) may be added to the rear wheels and/or the rear tires may be loaded with Calcium Chloride and water, which will add approximately another 100 lbs. of weight. Dual wheels may also be installed.

A crumbing attachment, Figure 6, is available when clean trench bottoms are essential.

A guide line tracer (AA) is provided on the machine to allow accurately positioned and extremely straight trenches to be dug for such things as building foundation walls, where concrete is poured directly into the trench, etc.

For truck or trailer transport, the machine is capable of loading itself. Refer to Figure 7. Loading planks with some auxiliary traction cleats should be made up. IMPORTANT - When loading or unloading, always use slow digging speeds. Never use transport speed. Also, be sure that wheel drive wing nut (S) is well tightened so that both wheels drive. The machine may be loaded either forwards or backwards. Always have boom raised as high as possible. Since the weight distribution of the machine is not so advantageous for forward loading (opposite to that shown in Figure 7) the operator should add some weight to the machine by bearing down on the handle as he leads it up the incline. When unloading, simply leave the digging speed drive engaged as the machine goes onto the incline. The machine cannot over-speed the drive mechanism when it reaches the steepest part of the incline.

18. TIRE PRESSURES

Rear - 8 lbs. without wheel weights, 10 lbs. with wheel weights, and/or crumber.
Front - 30 lbs.

LUBRICATION

Grease twice daily at (1) (all boom rollers) on Figure 2.

Grease twice daily at (2), (3), (7) on Figures 4 and 5.

Grease twice daily at (8) (six places), Figure 8, and operate the

sheaves through their full range of movement at each greasing.

Grease weekly at (4) and (5) on Figures 4 and 5A.

Pack front and rear wheels every 6 months.

Oil threads of Speed Control Rod (DD) occasionally.

Change oil in gear housing of the Speed Control once each month or two months depending on amount of service. Use SAE 80 gear oil. Fill one-half full, no more, and check supply once weekly. Filler and drain opening is shown at (13) on Figure 8.

Drain Hydraulic Lift System and refill monthly as follows:

For temperatures above 40°F - SAE 10W30 motor oil.

For temperatures below 40°F - SAE 5W20 motor oil.

Fill to level of filler opening. Check oil level frequently. The drain is found at (10), and the filler plug is found at (11) on Figure 5. Oil level plug is found at (14).

For high temperatures, when constant, SAE 20W40 may be used for better response.

For engine lubrication refer to engine instruction manual.

Main drive chain should be checked daily, maintain oil level to (9), Figure 5, with SAE 80 gear oil. Change once each month or two months depending on amount of service. Drain is found at (12).

ADJUSTMENTS

1. The Main Drive Belts are adjusted for running tension by first putting the drive in released position. Loosen bolt (29) and lower handle (0) just slightly. Retighten bolt (29) and try drive. Drive should just slip enough that when the digger chain is snagged or stalled, the operator has a brief moment to reach handle (0) and release the drive before the engine quits.
IMPORTANT - New drive belts should be powdered with tire talc once, just prior to placing on the machine. This will reduce the excessive grip and prevent damage or belt breakage, because of failure of the belts to slip when they should. No repeated application is necessary.
2. The Conveyor V-Belt is adjusted for tension by loosening bolt (25), sliding it downward in its slot and retightening. To replace the V-Belt, disconnect roller chain (26) at its parting point. Replace belt and reconnect chain. Refer to Figure 5.
3. The Conveyor Drive Chain should be adjusted in accordance with Figure 3 and paragraph 5 under assembly instructions.
4. The Dirt Moving Belt of the conveyor is tensioned by cam handle (X), Figure 4A. Loosen wing nut (W) next to the handle and rotate the handle clockwise. Lock again with wing nut. Only sufficient tension should be maintained so that the drive roller will not slip inside of the belt.

Adjustment (32), Figure 4A, on conveyor is used only for the purpose of getting the two conveyor rollers exactly parallel with each other during assembly or major rebuilding of the conveyor. It should not be disturbed unless the belt persists in running to one side, which indicates that the rollers are not parallel with each other. Careful measuring from end of lower roller shaft to end of upper roller shaft first on one side of the conveyor, and then on the other side will show how much they are out of alignment. Adjust (32) until the two sides measure alike.

5. The Hydraulic Lift V-Belt must be kept sufficiently tight so that it cannot slip. Loosen bolts (33) and slide pump downward until the belt is tight. Retighten bolts.
6. When the Transport & Digging Speed V-Belt wears to the point that control handle (N) begins to strike control bracket, loosen the bolts (27), Figure 5, and pivot handle upward so that it again clears by approximately $3/4$ ". Retighten bolts to clamp handle in place.
7. To Replace Digger Chain Sprocket. Disconnect LH wheel drive chain. Remove the digger chain from the machine. Lower boom to ground. Remove the six bolts from the sprocket and shaft flanges. Remove only the nuts and lockwashers from the six bolts indicated by (34) on Figure 4. Pull the bearing and shaft assembly (35) back as far as necessary (do not remove entirely or disassemble anything additional) to release the sprocket from between the shaft flanges. Note - this is a divided shaft and the sprocket is bolted between the end flanges. Replace sprocket and reassemble in reverse procedure. Be sure that the sprocket bolts are especially tight with no dirt or foreign matter between the flanges and sprocket.
8. The Wheel Drive Chains are adjusted by loosening bolt (20), Fig. 5, and sliding the sprocket back until the chain has the excess slack taken out. Retighten the bolt so that the sprocket cannot shift back. Do not over-tension chain.
9. The Output Chain (22), Fig. 4, is not adjustable. If too much looseness develops, shorten chain one pitch. This chain is intended to run on predetermined fixed centers.
10. The Primary Input Chain (24), Fig. 8, which serves to rotate the transmission case when the drive unit is set for digging speeds, is adjusted by loosening bolt (28) and sliding the idler sprocket (30) in to remove excess slack. Retighten the bolt.

The Secondary Input Chain (31), Figure 8, which serves to rotate or stop the transmission case when the drive unit is set for transport speeds, has no adjustment provided as it is intended to run on pre-determined fixed centers. When too much looseness develops, shorten chain one pitch.
11. The Variable Speed Drive Belt (36), Figure 8, is tensioned by loosening the locknut (37); (note- the nut has left hand threads; turn it in the opposite direction than that of a standard nut). Turn screw (38) clockwise the necessary amount and lock again with the locknut. Caution - do not over-tension. See "Trouble Shooting Section", if you have the belt tensioned and the unit seems to be slipping or failing to drive properly.

To change the Variable Speed Drive Belt, see "Speed Control Repair Instruction Section".

12. The Shrouds are removed by first removing the small hood at the top of the Speed Control Transmission. It is held there by two bolts. Be careful not to disturb the speed control screw, so that its initial setting or adjustment is not lost. The shrouds are held on to the machine by three bolts; one bolt is on each side at the rear, one bolt is at each side at top, and one bolt is at each side over the bottom edge. The wing nut (S), Figure 5, must be removed also.

TROUBLE SHOOTING

A. SPEED CONTROL TRANSMISSION

- * Erratic movement. This can come from several sources; variable drive V-Belt becoming too loose (do not over-tension!) or dirt is packing into the wheel drive chains. When the drive is intermittent or uneven, it usually is found that the wheel drive chains are very tight from mud packing into the sprockets. Clean chain and sprockets and keep them a little longer. When the drive is erratic and of low power, the belt may have become oily or greasy. The belt must be kept clean and dry. Clean belt and sheaves. In an emergency, a good belt dressing application will help.
- * Insufficient speed range. The variable sheaves and their X-bars (23), Fig. 8, are out of center on their allowed endwise movement for speed changing and they cannot move sufficiently to give the desired amount of speed change without one or the other sheave striking the limit ring provided on the shaft for each sheave side. Refer to the repair section for the transmission.
- * Difficult to change speed in digging range. Oil all moving points on the X-bars (23), Fig. 8, especially the bearing holders for the ball joint bearings that connect the X-bar and variable sheave sides together. These joints must be loose. The bearing holding plates (21) must slide on the X-bars as well as the bearing must pivot in its holder. Grease hubs often but sparingly and operate the sheaves through their entire range to distribute the grease properly.

B. HYDRAULIC LIFT SYSTEM

- * Low oil level will cause erratic, slow, or stoppage of movement.
- * V-Belt slippage will cause erratic, slow, or stoppage of movement.
- * When depths cannot be held, change cylinder packings. If trouble persists, change shuttle valve (BB), Figure 5A.
- * Replace Hydraulic Pump when oil pressure falls below 1000 psi at full engine speed with proper oil grade warmed up to operating temperature. See lubrication section.
- * Too light a grade of oil for the operating temperature will cause excessive internal leakage and poor response. This in turn causes additional heating.

C. CONVEYOR

- * Cleats on dirt moving belt begin to catch in opening as they go through into the dirt hopper. A deposit of soil is building up on the conveyor rollers, making their diameter larger. Clean off rollers and adjust scrapers close to rollers again to keep them clean.
- * Drive chain skips over conveyor sprocket occasionally with a rattling noise. Adjust chain in accordance with Figure 3 at the beginning of this book.
- * Drive Vee Belt tears for no apparent reason. Conveyor belt is too tight and will not allow roller to slip inside, or belt has climbed out of groove of engine pulley when drive is released. Vee Belt drive is then too loose.

D. POOR DIGGING RESULTS

- * Hard, compact soils, mildly abrasive to abrasive.

Wrong cutter equipment. Slicer type cutters will wear off leaving a rounded edge for cutting, which slides over the soil like a runner. Use chisel type cutters. Cleaner blades sometimes are a necessity in bringing up the fine, pulverized soil.

Too long a boom on the machine. Shallow depths, long booms, and hard soils do not work well together. Excessive down pressure is required to force the cutters down against the soil. Rear wheel traction is greatly reduced by applying machine's weight to cutters. Cutters tend to pull machine backwards as wheels with reduced traction try to move machine forward. Use shorter boom so boom is kept more vertical rather than horizontal. This adds traction to wheels and machine has fewer cutters to force into the soil at any one time. Cutting action will be faster with less wear for all parts.

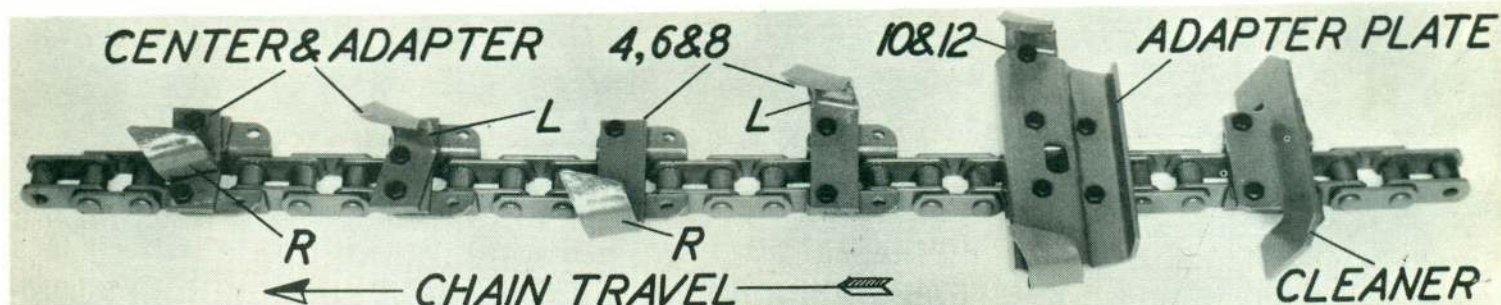
Hard surfacing of cutters for greater wear life can be done. This is looked upon as a local condition, and local experiences as to material and application techniques will vary from area to area. Do not electric weld hard surfacing material to cutter. Always use an acetylene gas torch for applying hard surfacing.

- * Stony soils. Either slicer or chisel cutters may work here, or they may be mixed; but use a wide cutter set-up, because the machine can bring up more stones for you. The boom also has more "drift" space and can force itself past large side wall imbedded stones. Use the shortest boom possible again to eliminate dragging the machine backwards as it catches on to the stones. Cleaner blades will help bring up the smaller stones which tend to roll alongside the cutter chain.
- * Soft, moist, easy cutting soils. Slicer type cutters work best here. Boom length is not so critical nor is the trench width, unless the soil is excessively wet. Then the wider trench works better. Cleaner blades are often useless in good cutting, moist soils. Dry soils, which pulverize easily, will require cleaner blades to bring up the fine particles.
- * Narrow, deep trenches are a troublesome nuisance to any trencher. Avoid them whenever possible. Contrary to popular belief, narrow, deep trenches consume more digging time than wider trenches of the same depth. Reserve your narrow digging to shallow trenches and use the shortest boom length possible.

13 (A) IV K

SLICER CUTTER SET-UP

This is a knife type cutter bent to a hook shape. Its cutting action is similar to that of a knife in that it cuts or slices the soil away. It works well in clear to medium rocky soil, from a moist to a sticky wet condition, and in frost up to a maximum of approximately $1\frac{1}{2}$ " to 2" deep. It is not generally considered a good cutter for very stony soil; hard, dry, well packed soil; or very hard, abrasive soils.



Select your Boom length and desired trench width. Read down column.

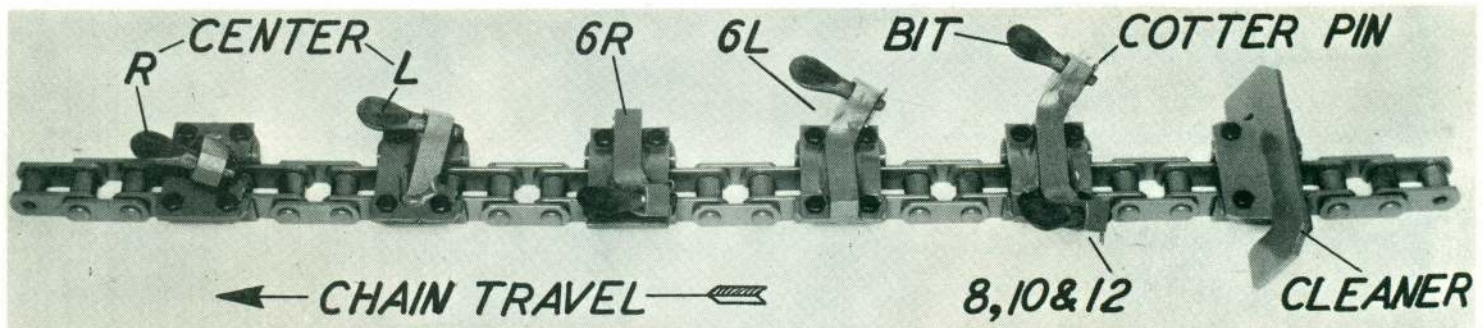
2½' (No. 20) Boom					3½' (No. 30) Boom					4½' (No. 40) Boom					5½' (No. 50) Boom				
4"	6"	8"	10"	12"	4"	6"	8"	10"	12"	4"	6"	8"	10"	12"	4"	6"	8"	10"	12"
CR	CR	CR	CR	CR	CR	CR	CR	CR	CR	CR	CR	CR	CR	CR	CR	CR	CR	CR	CR
CL	CL	CL	CL	CL	CL	CL	CL	CL	CL	CL	CL	CL	CL	CL	CL	CL	CL	CL	CL
4R	4R	4R	4R	4R	4R	4R	4R	4R	4R	4R	4R	4R	4R	4R	4R	4R	4R	4R	4R
4L	4L	4L	10	4L	4L	4L	4L	4L	4L	4L	4L	4L	4L	6L	4L	4L	4L	4L	4L
-	6R	6R	4L	10	-	6R	6R	10	10	CR	-	6R	10	10	CR	6R	6R	6R	10
CR	6L	6L	6R	6R	CR	6L	6L	6R	6R	CL	6R	6L	6R	6R	CL	6L	6L	6L	6R
CL	CR	8R	6L	6L	CL	CR	8R8L	6L	6L	4R	6L	8R	6L	8R8L	4R	CR	8R8L	8R	6L
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CR	6R	CL	CR	CR	CR	6R	4R	CL	Cle	4R	4L	CL	CL	CR	4R	6R	4R	CR	CR
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4R	CR	4L	4R	4R	4R	CR	6R	4L	CR	CR	6R	4L	4L	6R	CL	-	6R	4R	4R
4L	CL	6R	10	4L	4L	CL	6L	10	CL	CL	6L	6R	10	10	CL	CR	6L	4L	4L
-	4R	6L	4L	10	-	4R	8R8L	6R	4R	4R	CR	6L	6R	6L	4R	CL	8R8L	-	10
CR	4L	8R	6R	6R	CR	4L	Cle	6L	4L	4L	CL	8R	6L	8R8L	4L	4R	Cle	6R	6R
CL	6R	8L	6L	6L	CL	6R	CR	8R8L	10	CR	4R	8L	8R8L	12	CR	4L	CR	6L	6L
4R	6L	Cle	8R8L	8R8L	4R	6L	CL	Cle	6R	CL	4L	Cle	Cle	Cle	CL	6R	CL	8R	8R
4L	-	-	Cle	12	4L	CR	4R	CR	6L	4L	6R	CR	CR	CR	4R	6L	4R	8L	8L
CR - Denotes Center type Cutter and Adapter, R.H.					CR - Denotes Center type Cutter and Adapter, L.H.					CR - Denotes Center type Cutter and Adapter, L.H.					CR - Denotes Center type Cutter and Adapter, L.H.				
CL - Denotes Center type Cutter and Adapter, L.H.					CL - Denotes Center type Cutter and Adapter, L.H.					CL - Denotes Center type Cutter and Adapter, L.H.					CL - Denotes Center type Cutter and Adapter, L.H.				
4R, 6R, 8R - Denotes Bolt on Cutter for that width of trench, right hand.					4R, 6R, 8R - Denotes Bolt on Cutter for that width of trench, right hand.					4R, 6R, 8R - Denotes Bolt on Cutter for that width of trench, right hand.					4R, 6R, 8R - Denotes Bolt on Cutter for that width of trench, right hand.				
4L, 6L, 8L - Denotes Bolt on Cutter for that width of trench, left hand.					4L, 6L, 8L - Denotes Bolt on Cutter for that width of trench, left hand.					4L, 6L, 8L - Denotes Bolt on Cutter for that width of trench, left hand.					4L, 6L, 8L - Denotes Bolt on Cutter for that width of trench, left hand.				
10" Cutters are made up of 4" Cutters & the Cutter Adapter Plate.					10" Cutters are made up of 4" Cutters & the Cutter Adapter Plate.					10" Cutters are made up of 4" Cutters & the Cutter Adapter Plate.					10" Cutters are made up of 4" Cutters & the Cutter Adapter Plate.				
12" Cutters are made up of 6" Cutters & the Cutter Adapter Plate.					12" Cutters are made up of 6" Cutters & the Cutter Adapter Plate.					12" Cutters are made up of 6" Cutters & the Cutter Adapter Plate.					12" Cutters are made up of 6" Cutters & the Cutter Adapter Plate.				
Cle - Denotes Cleaner Blade (for desired trench width).					Cle - Denotes Cleaner Blade (for desired trench width).					Cle - Denotes Cleaner Blade (for desired trench width).					Cle - Denotes Cleaner Blade (for desired trench width).				

Note - All spaces are not always filled by Cutters. Also, note that the Cutter Chain is assembled in sequences and that the Center Cutters are the beginning of each Cutter sequence. These Slicer Cutters may be interspersed with Chisel type Cutters, if soil conditions warrant such simultaneous use.

ARPS CORPORATION, New Holstein, Wisconsin

CHISEL CUTTER SET-UP

This is a chisel bit type cutter pointed in the direction of the line of action. It is a digging action of picking, scraping and tearing the soil loose. It is a good cutter for hard soils, abrasive soils, medium to very stony soils and some frozen soils. It is not a good cutter for soft, wet, sticky soils, or certain soils which pack easily.



Select your Boom length and desired trench width. Read down column.

2½' (No. 20) Boom

3½' (No. 30) Boom

4½' (No. 40) Boom

5½' (No. 50) Boom

4"	6"	8"	10"	12"
CL	CL	CL	CL	CL
CR	CR	CR	CR	CR
4L	4L	6L	6L	6L
4R	4R	6R	6R	6R
CL	6L	8	4L	10
CR	6R	Cle	4R	Cle
4L	CL	CL	Cle	4L
4R	CR	CR	10	4R
4L	4L	4L	6L	12
CR	4R	4R	6R	8
CL	6L	6L	8	6L
4R	6R	6R	Cle	6R
4L	CL	Cle	CL	Cle
4R	CR	4L	CR	CL
CL	4L	4R	4L	CR
CR	4R	6L	4R	4L
4L	6L	6R	8	4R
4R	6R	8	10	12
		Cle	Cle	Cle

4"	6"	8"	10"	12"
CL	CL	CL	CL	CL
CR	CR	CR	CR	CR
4L	4L	8	8	12
4R	4R	4L	4L	4L
CL	6L	4R	6R	4R
CR	6R	6L	6L	8
4L	CL	6R	10	10
4R	CR	Cle	Cle	Cle
CL	4L	CL	CL	6L
CR	4R	CR	CR	6R
4L	6L	8	8	12
4R	6R	4L	4R	8
CL	CL	4R	6L	CL
CR	CR	6L	6R	CR
4L	4L	6R	10	10
4R	4R	Cle	Cle	Cle
CL	6L	CL	CL	4L
CR	6R	CR	CR	4R
4L	CL	8	8	12
4R	CR	4L	4L	8
CL	4L	4R	4R	6L
CR	4R	6L	10	6R
4L	6L	6R	8	10
4R	6R	Cle	Cle	Cle

4"	6"	8"	10"	12"
CL	CL	CL	CL	CL
CR	CR	CR	CR	CR
4L	4L	8	8	8
4R	4R	4L	4L	4L
CL	6L	4R	4R	4R
CR	6R	6L	10	12
4L	CL	6R	6L	6L
4R	CR	Cle	6R	6R
CL	4L	CL	Cle	10
CR	4R	CR	CL	Cle
4L	6L	8	CR	CL
4R	6R	4L	8	CR
CL	CL	4R	4L	8
CR	CR	6L	4R	12
4L	4L	6R	10	6L
4R	4R	CL	6L	6R
CL	6L	CR	6R	10
CR	6R	Cle	Cle	Cle
4L	CL	8	CL	CL
4R	CR	6L	CR	CR
CL	4L	6R	8	8
CR	4R	4L	4L	4L
4L	6L	4R	4R	4R
4R	6R	CL	10	12
CL	CL	CR	6L	6L
CR	CR	8	6R	6R
4L	4L	Cle	8	10
4R	4R	-	Cle	Cle

4"	6"	8"	10"	12"
CL	CL	CL	CL	CL
CR	CR	CR	CR	CR
4L	4L	8	10	12
4R	4R	4L	4L	4L
CL	6L	4R	4R	4R
CR	6R	6L	8	10
4L	CL	6R	Cle	8
4R	CR	Cle	CL	Cle
CL	4L	CL	CR	CL
CR	4R	CR	10	CR
4L	6L	8	6L	12
4R	6R	4L	6R	6L
CL	CL	4R	4L	6R
CR	CR	6L	4R	10
4L	4L	6R	8	8
4R	4R	Cle	Cle	Cle
CL	CL	CL	CL	CL
CR	CR	CR	CR	CR
4L	4L	8	10	12
4R	4R	4L	4L	4L
CL	6L	4R	4R	4R
CR	6R	6L	8	10
4L	CL	6R	Cle	8
4R	CR	Cle	CL	Cle
CL	4L	CL	CR	CL
CR	4R	CR	10	CR
4L	6L	8	6L	12
4R	6R	6L	6R	6L
CL	CL	6R	4L	6R
CR	CR	4L	4R	10
4L	6L	4R	8	8
4R	6R	Cle	Cle	Cle

CR - Denotes Center Bracket, right hand.

CL - Denotes Center Bracket, left hand.

4R, 6R - Denotes 4" or 6" Bracket, right hand.

4L, 6L - Denotes 4" or 6" Bracket, left hand.

8, 10, 12 - Denotes 8", 10", or 12" Bracket for that trench width

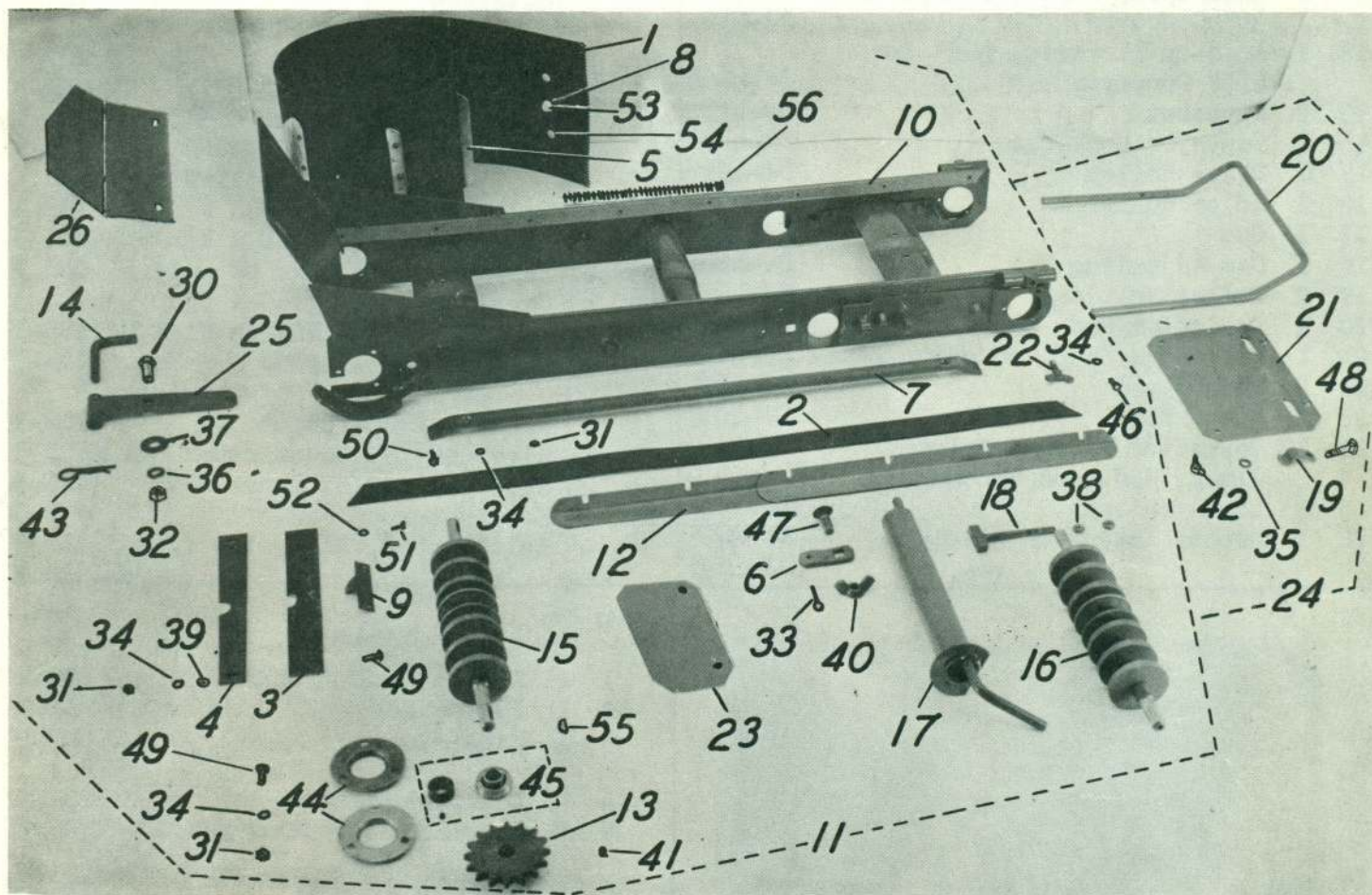
Cle - Denotes Cleaner Blade for that trench width. All Cutter Brackets and Cleaners bolt on to Chain with four bolts (3/8 NF x 7/8 Alloy, heat treated). These Chisel Cutters may be interspersed with Slicer Cutters, if soil conditions warrant such simultaneous use.

ARPS CORPORATION, New Holstein, Wisconsin

REPAIR PARTS SECTION

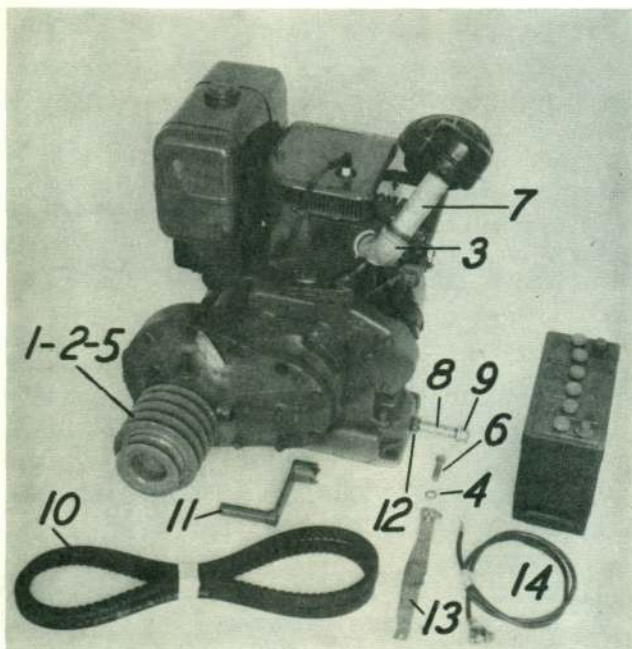
IMPORTANT

Identify the part on the drawing pertaining to its assembly, find its number and look it up in the parts list. When ordering parts, give the part number, the full name of the part, and the quantity of parts wanted.



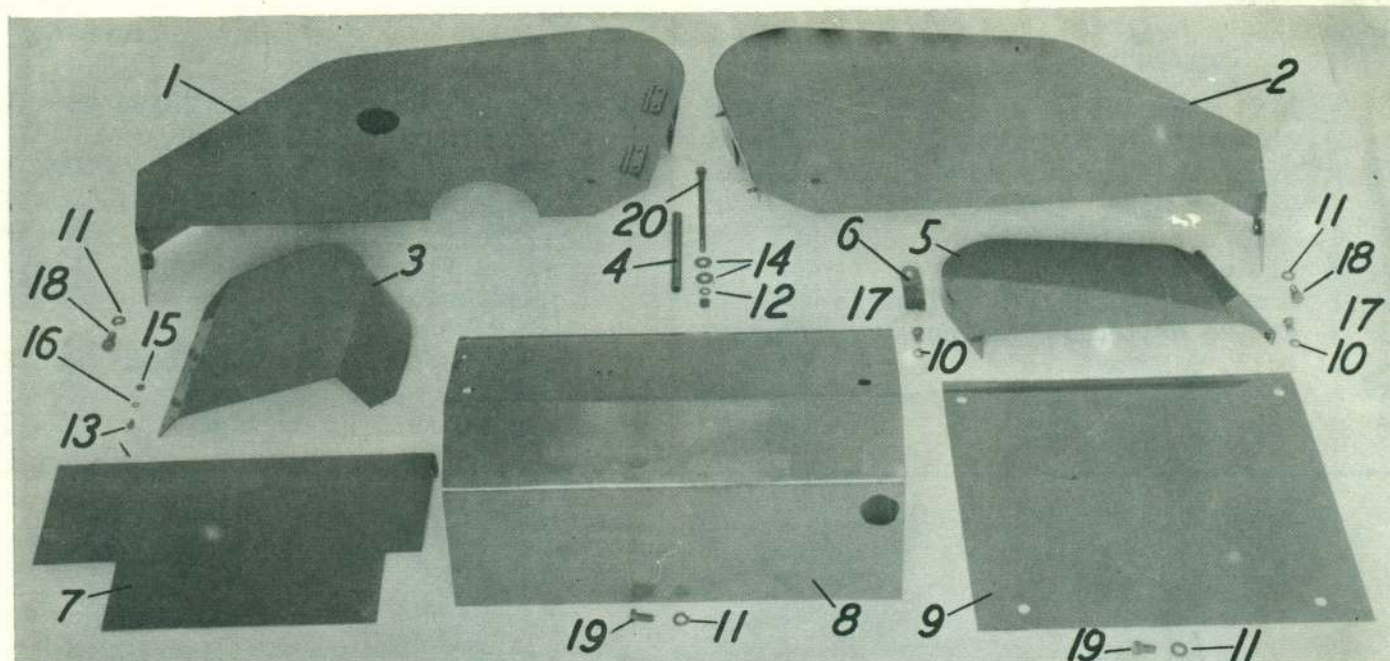
Index No. No. Req.	Description	Part No.	Index No. No. Req.	Description	Part No.
1 1	Conveyor Belt, 80 $\frac{1}{4}$ " for 36" Conveyor, assembled, ready to use	DJ-401	4 2	Scraper, Roller	DJ-404
1A 1	Conveyor Belt, 103 $\frac{1}{4}$ " for 47 $\frac{1}{2}$ " Conveyor, assembled, ready to use	DJ-401A	5 14	Angle Cleats for Conveyor Belt	DJ-405
2 2	Side Strip Belting, 38-3/4" for 36" Conveyor	DJ-402	6 1	Clamp	DJ-406
2A 2	Side Strip Belting, 50 $\frac{1}{4}$ " for 47 $\frac{1}{2}$ " Conveyor	DJ-402A	7 4	Slide Rail, 30 $\frac{1}{4}$ " for 36" Conveyor	DJ-407
3 1	Wiper Strip Belting	DJ-403	7A 4	Slide Rail, 41-3/4" for 47 $\frac{1}{2}$ " Conveyor	DJ-407A
			8 14	Belt Guide Button	DJ-410
			9 2	Roller Groove Scraper	DJ-412
			10 1	Conveyor Frame, 36", roller to	

Index No. No. Req.	Description	Part No.	Index No. No. Req.	Description	Part No.
	roller, Weldment only, stripped	DJ-415	30 2	Bolt, $\frac{1}{2}$ NC x $1\frac{1}{4}$	TDS-4
10A 1	Conveyor Frame, $47\frac{1}{2}$ ", roller to		31 18	Nut, $\frac{1}{4}$ NC	TDS-34
	roller, Weldment only, stripped	DJ-415B	32 2	Nut, $\frac{1}{2}$ NC	TDS-40
11 1	Conveyor, 36", roller to roller		33 1	Cotter Pin, $3/16$ x 1	TDS-61
	assembled, w/conveyor belt,		34 24	Lockwasher, $\frac{1}{4}$	TDS-78
	sprockets, etc., but less dirt		35 2	Lockwasher, $3/8$	TDS-79
	deflector	DJ-415C	36 2	Lockwasher, $\frac{1}{2}$	TDS-82
11A 1	Conveyor, $47\frac{1}{2}$ ", roller to roller		37 2	Washer, $\frac{1}{2}$ Wrought	TDS-83
	assembled, w/conveyor belt,		38 2	Nut, $3/8$ NC Jam	TDS-159
	sprockets, etc., but less dirt		39 4	Washer, $\frac{1}{4}$ Wrought	TDS-221
	deflector	DJ-415D	40 1	Wing Nut, $\frac{1}{2}$ NC	TDS-226
12 2	Anti-spill Strip, 28- $3/4$ " for		41 2	Setscrew, $5/16$ NC x $5/16$	TDS-291
	36" Conveyor	DJ-416		Socket Drive	
12A 2	Anti-spill Strip, $40\frac{1}{4}$ " for		42 2	Wing Nut, $3/8$ NC	TDS-297
	$47\frac{1}{2}$ " Conveyor	DJ-416A	43 1	Wire-form Cotter, #2629	TDS-301
13 2	Sprocket	DJ-417	44 8	Flangette Stamping, 40MSC1	TDS-303
14 1	Conveyor Lock Pin	DJ-418	45 4	Bearing, Fafnir RA010PPB	TDS-304
15 1	Drive Roller	DJ-421		w/collar	
16 1	Idler Roller	DJ-430	46 6	Bolt, $\frac{1}{4}$ NF x $\frac{1}{2}$	TDS-340
17 1	Cam	DJ-440	47 1	Carriage Bolt, $\frac{1}{2}$ NC x $1\frac{1}{2}$	TDS-344
18 1	Cam Adjusting Tee	DJ-450	48 2	Carriage Bolt, $3/8$ NC x $1\frac{1}{4}$	TDS-347
19 2	Deflector Clamp	DJ-457	49 4	Carriage Bolt, $\frac{1}{4}$ NC x $3/4$	TDS-349
20 1	Deflector Rod, long	DJ-458	50 8	Machine Screw, $\frac{1}{4}$ NC x $7/8$, Flat Hd.	TDS-351
21 1	Deflector Flap, no swinging	DJ-459	51 23	Machine Screw, #10B x $\frac{1}{2}$ Hex	TDS-352
22 2	Thumbscrew	DJ-460		Self-tapping	
23 1	Stone Flap	DJ-461	52 43	Washer, #10 Wrought	TDS-357
24 1	Deflector Flap, complete:	DJ-465	53 14	Rivet, $\frac{1}{4}$ x $7/8$, Countersunk Hd.	TDS-360
	Clamp, Rod, and hardware		54 28	Rivet, $\frac{1}{4}$ x $3/8$, Truss Head	TDS-361
25 2	Conveyor Lock	DJ-470	55 2	Key, Woodruff #607	TDS-365
26 1	Hopper Extension Shield	DJ-475	56 -	Belt Lacing, Alligator #15	TDS-373
		DJ-466			

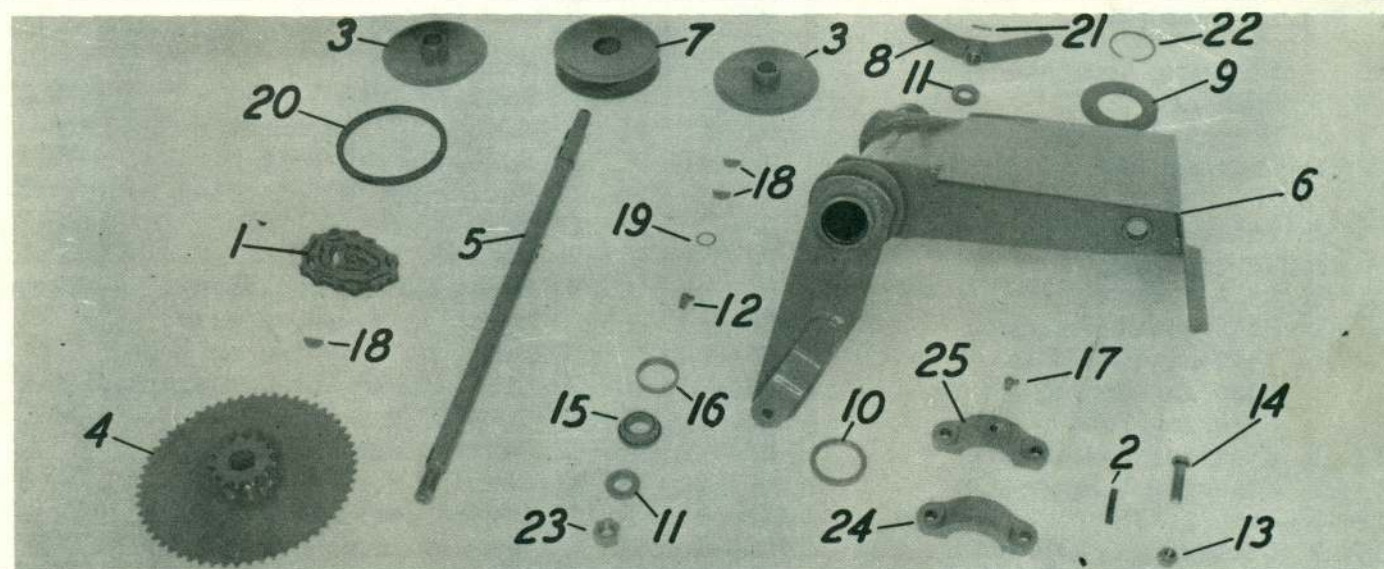


Index No. No. Req.	Description	Part No.
1 1	Engine Pulley, AGND	DJ-255
2 1	Pulley Key	DJ-256
3 1	Exhaust Elbow	DJ-257
4 4	Lockwasher, $\frac{1}{2}$	TDS-82
5 2	Setscrew, $3/8$ NC x $3/8$	TDS-164
	Socket Head	
6 4	Bolt, $\frac{1}{2}$ NF x $1\frac{1}{2}$	TDS-495
7 1	Pipe Nipple, $1\frac{1}{4}$ NPT x 5	TDS-526
8 1	Pipe Nipple, $3/8$ NPT x $3\frac{1}{2}$	TDS-527
9 1	Pipe Cap, $3/8$ NPT	TDS-528
10 1	set 2-Matched Vee Belts	TDS-529
	Goodyear C-51 Hy-T	
11 1	Hand Crank for Wisconsin	TDS-530
	AGND Engine	
12 1	Pipe Bushing, $3/4$ NPT to	TDS-546
	$3/8$ NPT	
13 1	Ground Cable (Optional)	TDS-547
14 1	Power Cable (Optional)	TDS-548

Electrical starting equipment is optional. When supplied, an Automotive Storage Battery, 12 Volt, 45 Amp-hour capacity or better, of the same type as used on Ford automobiles from 1956 through 1959, is required. The system should be hooked up in accordance with the Engine Operating Manual.

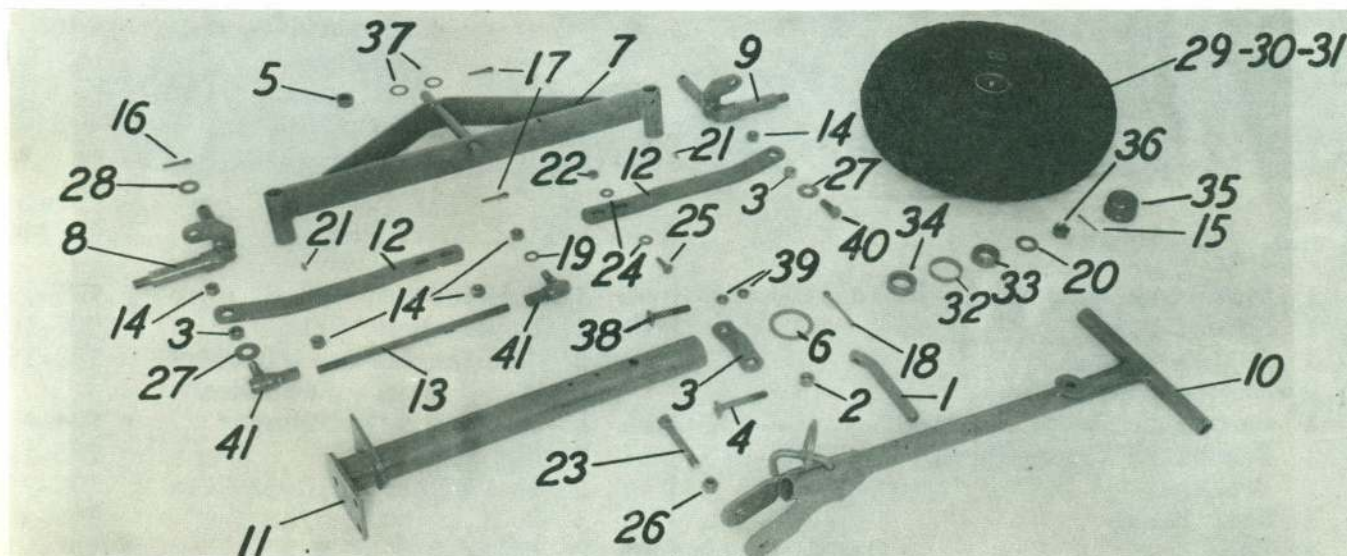


Index No. No. Req.	Description	Part No.	Index No. No. Req.	Description	Part No.
1 1	Shroud RH (Eng. Pulley Side)	DJ-168	11 8	Lockwasher, 3/8	TDS-79
2 1	Shroud L.H.	DJ-169	12 2	Lockwasher, 5/16	TDS-107
3 1	Pulley Shroud	DJ-170	13 4	Machine Screw, #10x32x $\frac{1}{2}$ Oval Head	TDS-150
4 2	Shroud Spacer Tube	DJ-171	14 4	Washer, 5/16 Wrought	TDS-212
5 1	Generator Drive Shroud	DJ-172	15 4	Nut, #10-32	TDS-296
6 1	Generator Drive Shroud Bracket	DJ-173	16 4	Lockwasher, #10-32	TDS-298
7 1	Rear Panel	DJ-174	17 3	Bolt, $\frac{1}{4}$ NC x 3/4	TDS-343
8 1	Hood	DJ-175	18 2	Bolt, 3/8 NF x 1	TDS-408
9 1	Front Panel	DJ-176	19 6	Bolt, 3/8 NF x 3/4	TDS-426
10 3	Lockwasher, $\frac{1}{4}$	TDS-78	20 2	Bolt, 5/16 NC x 6	TDS-545

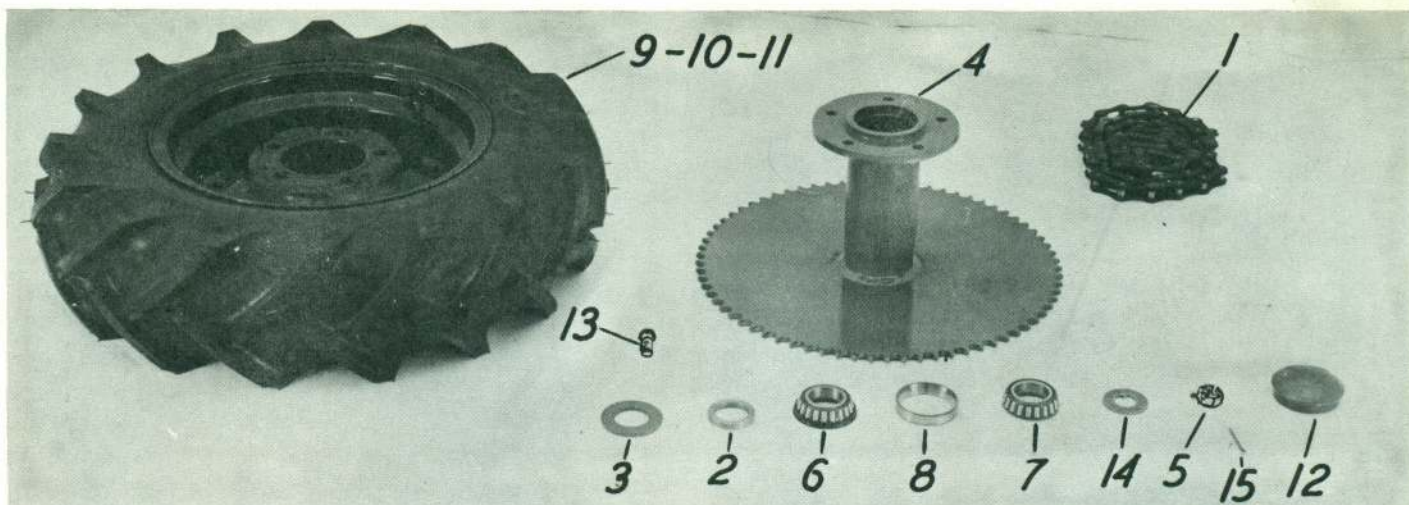


Index No. No. Req.	Description	Part No.	Index No. No. Req.	Description	Part No.
1 1	Roller Chain, w/connecting link, A-2040, 33 pitches	DJ-128	3 2	Clutch Face, Plain	DJ-238
2 4	Felts, Pillow Block	DJ-235	4 1	Wheel Drive Sprocket, Double	DJ-240
			5 1	Countershaft, long	DJ-244

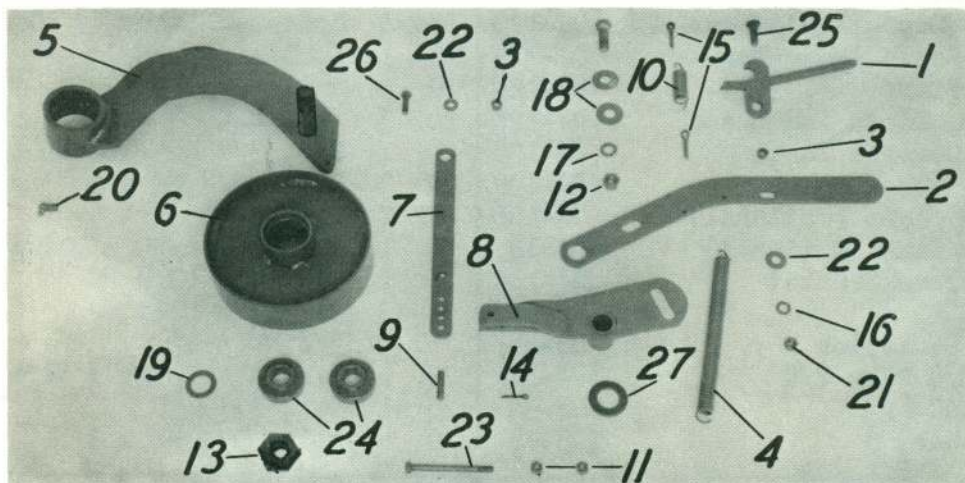
Index No. No. Req.	Description	Part No.	Index No. No. Req.	Description	Part No.
6 1	Lift Quadrant	DJ-245	17 2	Grease Fitting, 5/16 Drive Angle	TDS-314
7 1	Clutch Face, Sprocket	DJ-246	18 3	Woodruff Key #808	TDS-370
8 1	Wing Nut, 3/4 NF, bent	DJ-247	19 1	Retaining Ring Nat.XS0-237	TDS-387
9 1	Closure Ring	DJ-248	20 2	V-Belt, 4L180	TDS-390
10 2	Neoprene Sponge Ring	DJ-249	21 1	Roll Pin, 3/16 x 1-1/8	TDS-501
11 2	Clutch Washer	DJ-251	22 1	Retaining Ring 2-9/16 x 2 1/4 x .062	TDS-524
12 1	Grease Fitting, 1/8 NPT Angle	TDS-92	23 1	Nut, 3/4 NF, Self-locking	TDS-525
13 4	Nut, 1/2 NF, Self-locking	TDS-210	24 2	Pillow Block, Plain	TJ-35
14 4	Bolt, 1/2 NF x 2	TDS-262	25 2	Pillow Block, Drilled	TJ-35A
15 2	Bearing Cone, 07100L w/seal	TDS-311			
16 2	Bearing Cup, 07196	TDS-313			



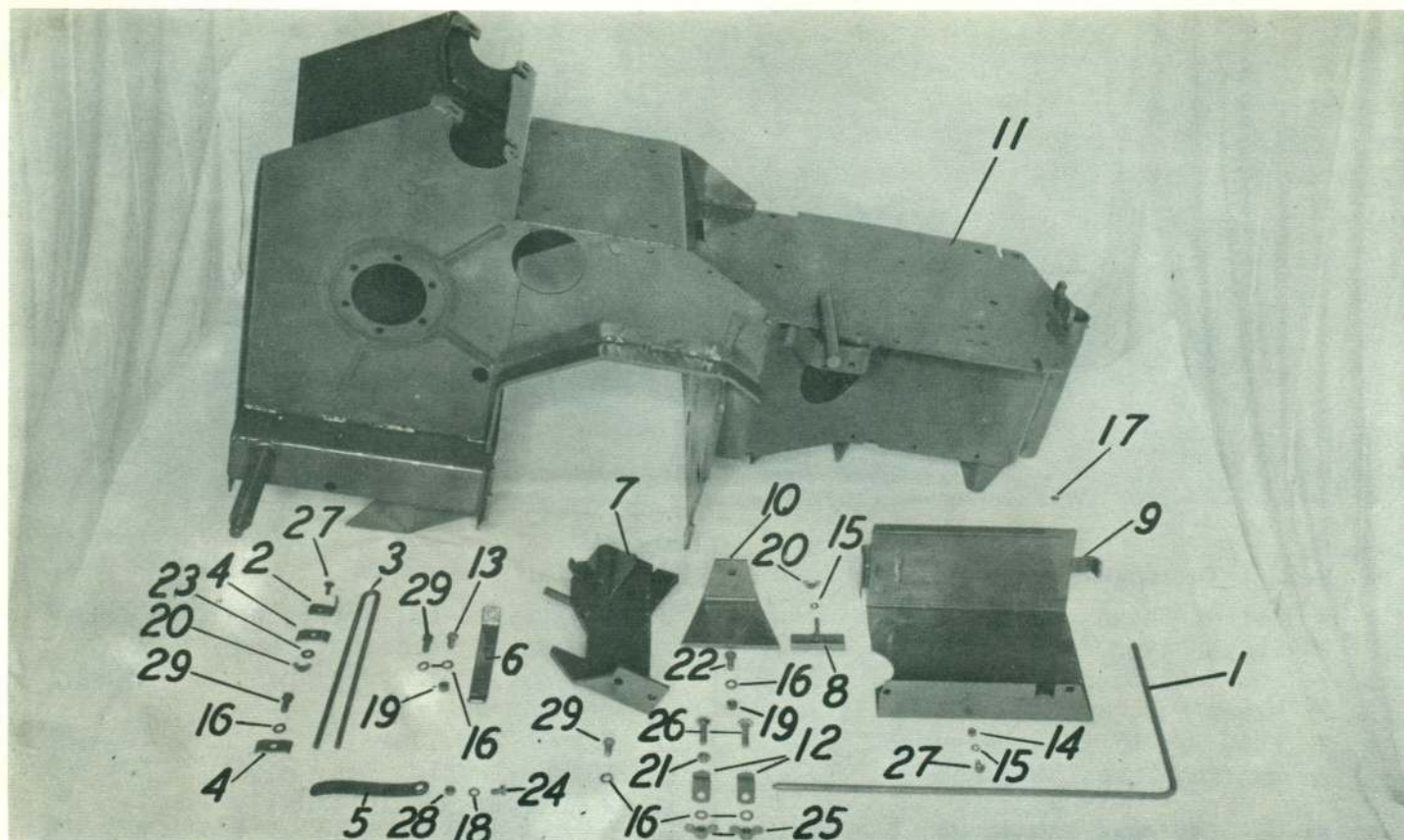
Index No. No. Req.	Description	Part No.	Index No. No. Req.	Description	Part No.
1 1	Steering Lock Handle	DJ-105	22 2	Nut, 3/8 NC	TDS-117
2 3	Bushing	DJ-106	23 1	Bolt, 1/2 NF x 3	TDS-130
3 1	Steering Post Clamp	DJ-117	24 4	Washer, 3/8 Wrought	TDS-131
4 1	Carriage Bolt, 7/16 NC x 3 Hardened	DJ-121	25 2	Bolt, 3/8 NC x 1 1/4	TDS-197
5 1	Retainer Bushing	DJ-479	26 1	Nut, 1/2 NF Self-locking	TDS-210
6 1	Thrust Ring	DJ-551	27 2	Washer, 1/2 SAE	TDS-243
7 1	Axle Assembly	DJ-562	28 2	Washer, 3/4 SAE	TDS-293
8 1	Right-hand Spindle	DJ-563	29 2	Front Wheel, includes brgs., hub cap, grease seal, but no tire or tube	TDS-329
9 1	Left-hand Spindle	DJ-564	30 2	Tire 4:00x8 Automotive Tread	TDS-330
10 1	Steering Handle	DJ-570	31 2	Tube 4:00 x 8	TDS-331
11 1	Steering Post	DJ-571	32 4	Bearing Cup #07196	TDS-332
12 1	Steering Cross Links	DJ-572	33 4	Bearing Cone #07100	TDS-333
13 1	Steering Link Rod	DJ-574	34 2	Grease Seal, Front Wheel	TDS-334
14 5	Nut, 1/2 NF	TDS-39	35 -	Hub Cap, Front Wheel	TDS-335
15 2	Cotter Pin, 1/8 x 1 1/4	TDS-58	36 2	Slotted Nut, 5/8 NF	TDS-354
16 2	Cotter Pin, 3/16 x 1 1/2	TDS-62	37 -	Washer, 3/4 x 1 1/4 x 1 1/4 ga	TDS-420
17 2	Cotter Pin, 1/4 x 1 1/2	TDS-63	38 1	Carriage Bolt, 7/16 NCx2 1/2	TDS-424
18 1	Cotter Pin, 1/4 x 2 1/2	TDS-65	39 2	Jam Nut, 7/16 NC	TDS-425
19 1	Lockwasher, 1/2	TDS-82	40 1	Bolt, 1/2 NF x 1 1/2	TDS-493
20 2	Washer, 5/8 Wrought	TDS-85	41 2	Ball Joint, 1/2 NF	TDS-543
21 2	Grease Fitting, 1/4 SAE	TDS-93			



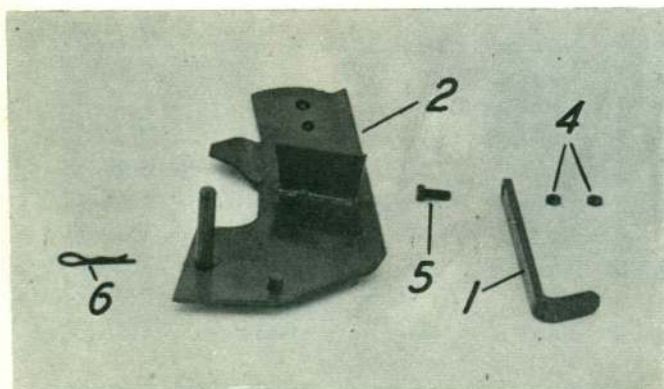
Index No. No. Req.	Description	Part No.	Index No. No. Req.	Description	Part No.
1 2	Roller Chain, A2050, 59 P.	DJ-116	10 2	Tire, 6-12, 2-Ply, open center traction tread	TDS-325
2 2	Spacer Ring	DJ-223	11 2	Tube, 6-12, w/hydra- flation valve	TDS-326
3 2	Hub Seal Disc	DJ-501	12 2	Hub Cap, Rear	TDS-327
4 2	Wheel Hub, Rear	DJ-510	13 10	Wheel Bolt, Rear Wheel	TDS-328
5 2	Nut, 3/4 NF Castle	TDS-50	14 2	Washer, 3/4 Internally Keyed	TDS-356
6 2	Bearing Cone, LM67048L w/seal	TDS-309	15 2	Cotter Pin, 3/16 x 1 1/4	TDS-358
7 2	Bearing Cone, LM67048 wo/seal	TDS-310	*	Connector Link, A-2050	TDS-376
8 4	Bearing Cup, LM67010	TDS-312	*	Offset Link, A-2050	TDS-377
9 2	Wheels, 12 x 5 JA, Rear	TDS-324	* For repair of chain (not shown)		



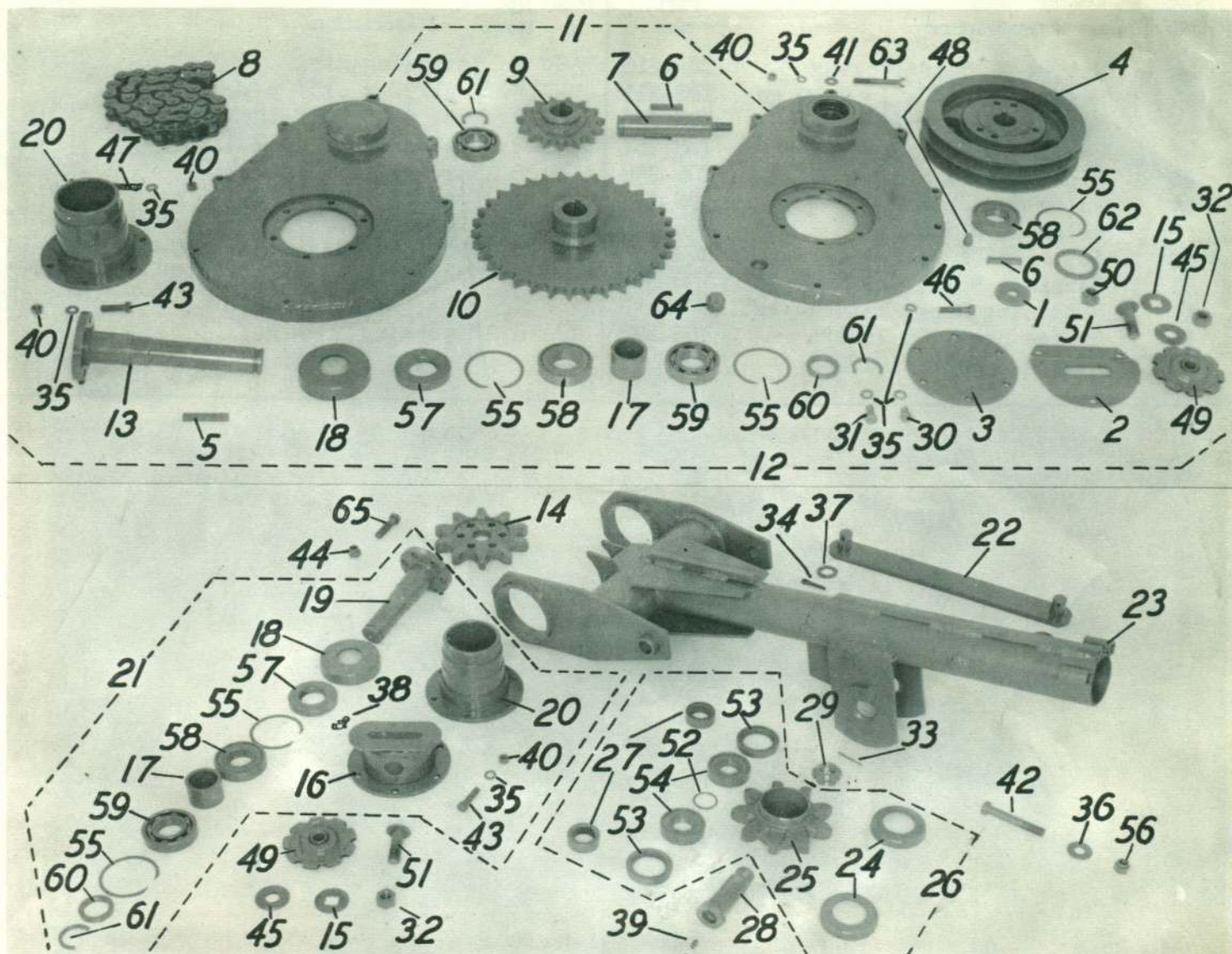
Index No. No. Req.	Description	Part No.	Index No. No. Req.	Description	Part No.
1 1	Handle Latch	DJ-286	15 2	Cotter Pin, 3/16 x 1	TDS-61
2 1	Handle	DJ-287	16 1	Lockwasher, 3/8	TDS-79
3 2	Latch Spacer	DJ-288	17 1	Lockwasher, 1/2	TDS-82
4 1	Spring, Main Tensioner	DJ-289	18 2	Washer, 1/2 Wrought	TDS-83
5 1	Main Belt Tension Arm	DJ-290	19 1	Washer, 1-3/4x15/16x10 ga	TDS-88
6 1	Idler Pulley, less bearings	DJ-291	20 1	Grease Fitting, 1/8 NPT	TDS-92
7 1	Link, Main Tensioner	DJ-292	21 1	Nut, 3/8 NC	TDS-117
8 1	Lever Arm, Handle	DJ-293	22 2	Washer, 3/8 Wrought	TDS-131
9 1	Link Pin	DJ-294	23 1	Bolt, 3/8 NF x 3 1/2	TDS-148
10 1	Spring, Latch	DJ-304	24 2	Bearing, Ball, Fafnir RAOI4PP wo/collar	TDS-307A
11 2	Nut, 3/8 NF	TDS-35	25 1	Carriage Bolt 3/8 NC x 1 1/4	TDS-347
12 1	Nut, 1/2 NF	TDS-39	26 1	Bolt, 3/8 NF x 1	TDS-408
13 1	Nut, 7/8 NF Jam	TDS-53	27 -	Washer, 7/8x1-3/4x18 ga	TDS-487
14 1	Cotter Pin, 1/8 x 1	TDS-57			



Index No.	No. Req.	Description	Part No.	Index No.	No. Req.	Description	Part No.
1	1	Guide Rod	DJ-119	16	10	Lockwasher, 3/8	TDS-79
2	1	Marker, Depth Indicator	DJ-123	17	1	Grease Fitting, 1/4 NF	TDS-93
3	1	Staff, Depth Indicator	DJ-124	18	1	Lockwasher, 5/16	TDS-107
4	2	Clamp, Staff	DJ-125	19	6	Nut, 3/8 NC	TDS-117
5	1	Pointer, Depth Indicator	DJ-126	20	3	Wing Nut, 1/4 NC	TDS-121
6	1	Brace, Control Panel	DJ-138	21	1	Nut, 3/8 NC Jam	TDS-159
7	1	Control Panel	DJ-139	22	3	Bolt, 3/8 NC x 1	TDS-167
8	2	Battery Clamp (Optional)	DJ-146	23	1	Washer, 1/4	TDS-221
9	1	Battery Case (Optional)	DJ-147	24	1	Bolt, 5/16 NC x 3/4	TDS-249
10	1	Lift Anchor Bracket	DJ-148	25	2	Wing Nut, 3/8 NC	TDS-297
11	1	Frame	DJ-149	26	2	Carriage Bolt, 3/8 NC x 1 1/2	TDS-346
12	2	Clamp, Deflector	DJ-457	27	4	Carriage Bolt, 1/4 NC x 3/4	TDS-349
13	1	Bolt, 3/8 NC x 7/8	TDS-33	28	1	Nut, 5/16 NC	TDS-353
14	3	Nut, 1/4 NC	TDS-34	29	4	Bolt, 3/8 NF x 1	TDS-408
15	5	Lockwasher, 1/4	TDS-78				

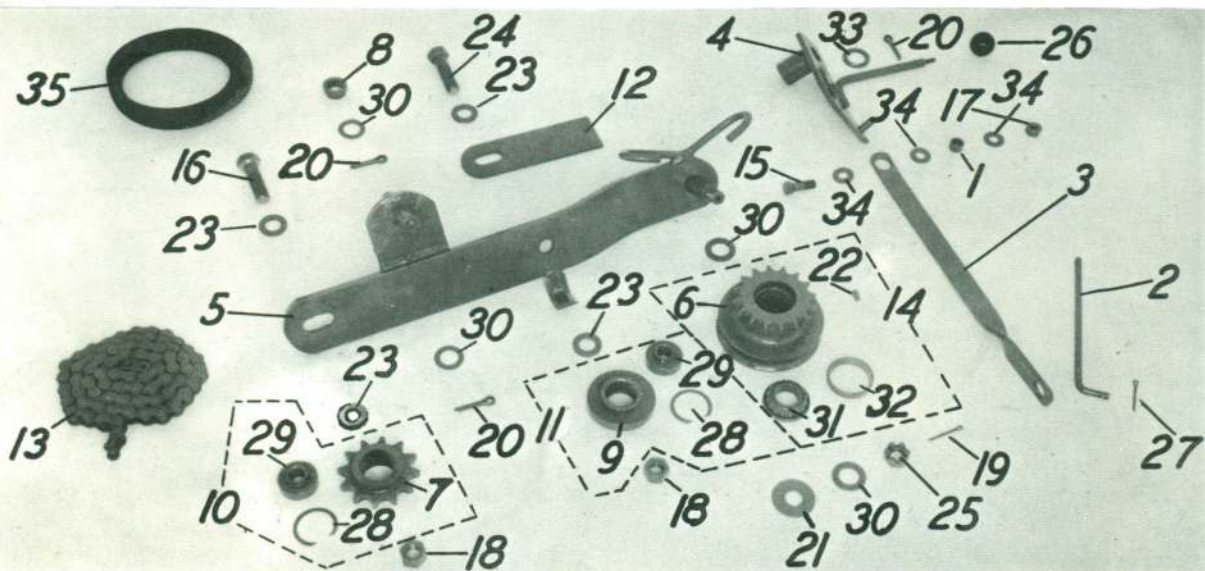


Index No.	No. Req.	Description	Part No.
1	2	Plow Stop	DJ-115
2	1	Trench Side Spill Shield (Shown)	DJ-131LH
3	1	Trench Side Spill Shield (Not Shown)	DJ-131RH
4	4	Jam Nut, 3/8 NC	TDS-159
5	2	Bolt, 3/8 NC x 1	TDS-167
6	2	Wire-form Cotter, #2629	TDS-301



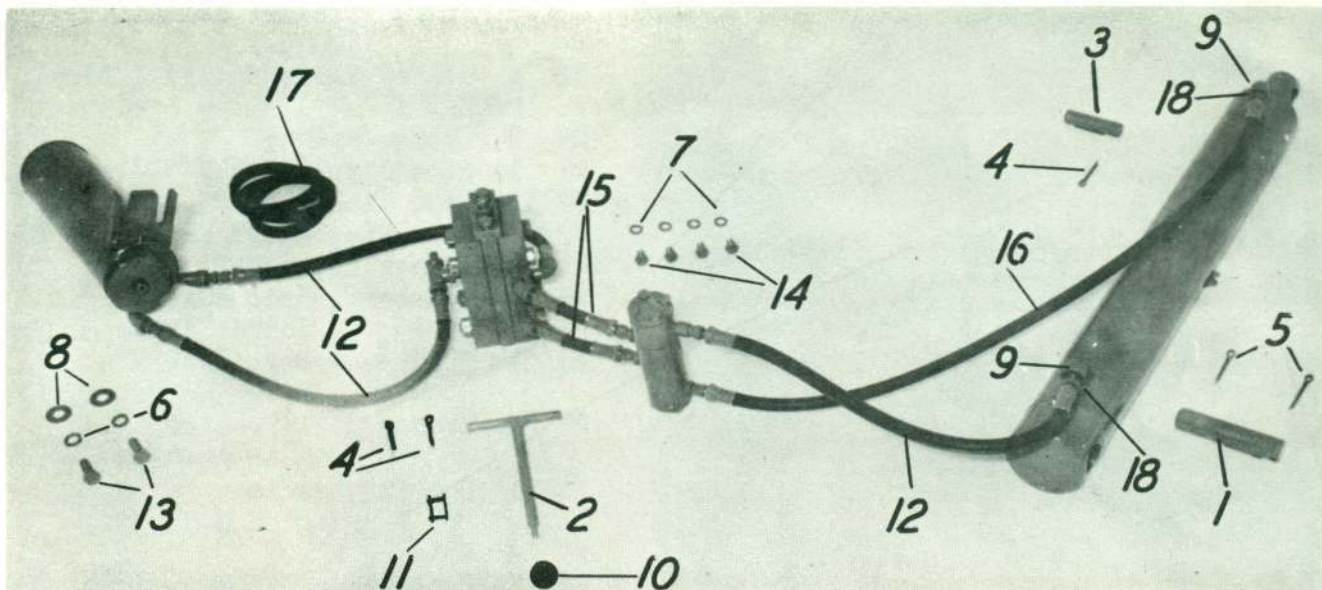
Index No. No. Req.	Description	Part No.	Index No. No. Req.	Description	Part No.
1	1 Retainer Washer	DJ-107	23	1 Boom Base	DJ-199
2	1 Idler Sprocket Bracket RH	DJ-180	24	2 Seal Guard	DJ-222
3	1 Cover Plate	DJ-181	25	1 Boom Idler Sprocket	DJ-2503
4	1 Driven Pulley, Main Drive	DJ-182	26	1 Boom Idler Sprkt. Assembled	DJ-2503A
5	1 Main Drive Shaft Key	DJ-183	27	2 Seal Ring	DJ-2505
6	2 Pinion Shaft Key	DJ-184	28	1 Roller Shaft	DJ-2506
7	1 Pinion Sprocket Shaft	DJ-185	29	1 Roller Shaft Nut	DJ-2507
8	1 Drive Chain	DJ-186	30	3 Bolt, 3/8 NC x 3/4	TDS-21
9	1 Pinion Sprocket	DJ-187	31	3 Bolt, 3/8 NC x 7/8	TDS-33
10	1 Bull Sprocket	DJ-188	32	2 Nut, 5/8 NC Jam	TDS-46
11	1 Transfer Case	DJ-189	33	1 Cotter Pin, 1/8 x 1 1/2	TDS-59
12	1 Transfer Drive Assembly	DJ-189A	34	4 Cotter Pin, 3/16 x 1 1/2	TDS-62
13	1 Main Shaft R.H.	DJ-190	35	26 Lockwasher, 3/8	TDS-79
14	1 Digger Chain Sprocket	DJ-191	36	2 Washer, 1/2 Wrought	TDS-83
15	2 Squared Washer	DJ-192	37	4 Washer, 1-3/4x15/16x10 ga	TDS-88
16	1 Idler Sprocket Bracket LH	DJ-193	38	1 Grease Fitting, 1/8 NPT	TDS-92
17	2 Bearing Spacer	DJ-194		Angle	
18	2 Dust Cap	DJ-195	39	1 Grease Fitting, 1/4 SAE	TDS-93
19	1 Main Shaft, L.H.	DJ-196	40	15 Nut, 3/8 NC	TDS-117
20	2 Bearing Holder	DJ-197	41	1 Washer, 3/8 Wrought	TDS-131
21	1 Bearing Holder, Assembled	DJ-197A	42	2 Bolt, 1/2 NC x 4 1/2	TDS-137
22	2 Lift Links	DJ-198	43	12 Bolt, 3/8 NC x 1 1/4	TDS-197

Index No. No. Req.	Description	Part No.	Index No. No. Req.	Description	Part No.
44 6	Nut, $\frac{1}{2}$ NF Self-locking	TDS-210	55 5	Retaining Ring	TDS-531
45 2	Washer, 11/16 x $1\frac{1}{4}$ x 10 ga	TDS-211		2-31/32 x .187 x .062	
46 5	Bolt, 3/8 NC x $2\frac{1}{4}$	TDS-236	56 2	Nut, $\frac{1}{2}$ NC Self-locking	TDS-532
47 2	Bolt, 3/8 NC x 3	TDS-251	57 2	Grease Seal, CR-284116	TDS-534
48 1	Pipe Plug, $\frac{1}{4}$ NPT	TDS-258	58 3	Bearing, Fafnir 207KD	TDS-535
49 2	Idler Sprocket Aetna AG-2416B	TDS-317	59 3	Bearing, Fafnir 207K	TDS-536
50 1	Nut, 5/8 NF Self-locking	TDS-436	60 2	Washer, 1-3/8 x 2-1/8 x 18ga	TDS-537
51 2	Carriage Bolt, 5/8 NC x $2\frac{1}{2}$	TDS-454	61 3	Retaining Ring, Nat.XSO-249	TDS-538
52 1	Retaining Ring, Nat.XRO-448	TDS-495	62 1	Grease Seal, Nat. 50639	TDS-539
53 2	Grease Seal, CR 244124	TDS-496	63 1	Bolt, 3/8 NC x $3\frac{1}{2}$	TDS-540
54 2	Bearing, Federal 1206F	TDS-497	64 1	Pipe Plug, 3/4 NPT	TDS-541
			65 -	Bolt, $\frac{1}{2}$ NF x $2\frac{1}{2}$ H.T.	TDS-542

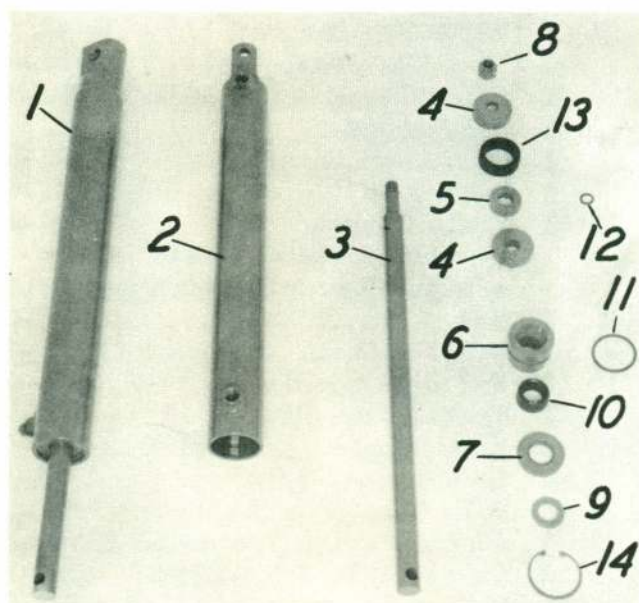


Index No. No. Req.	Description	Part No.	Index No. No. Req.	Description	Part No.
1 1	Bushing	DJ-106	18 2	Nut, 5/8 NF	TDS-444
2 1	Spring Rod	DJ-472	19 1	Cotter Pin, 1/8 x $1\frac{1}{4}$	TDS-58
3 1	Belt Tightener Bar	DJ-473	20 3	Cotter Pin, 3/16 x $1\frac{1}{2}$	TDS-62
4 1	Belt Tightener, Conveyor	DJ-474	21 1	Washer, 5/8 Wrought	TDS-85
5 1	Conveyor Drive Frame	DJ-475	22 1	Grease Fitting, $\frac{1}{4}$ NF	TDS-93
6 1	Conveyor Pulley, Sprocket only	DJ-477	23 4	Washer, 11/16 IDx $1\frac{1}{4}$ ODx10 ga	TDS-211
7 1	Idler Sprocket only	DJ-478	24 1	Bolt, 5/8 NF x $2\frac{1}{2}$	TDS-336
8 1	Retainer Bushing	DJ-479	25 1	Slotted Nut, 5/8 NF	TDS-354
9 1	Idler Roller only	DJ-481	26 1	Plastic Knob, $1\frac{1}{4}$ Dia.x $1\frac{1}{4}$ NC	TDS-371
10 1	Idler Sprocket, w/bearings, washers and bolt	DJ-485	27 1	Cotter Pin, 1/8x7/8 Alloy	TDS-384
11 1	Idler Roller, w/bearings, washers and bolt	DJ-486	28 2	Retaining Ring, 1-45/64 x 1-29/64 x .042	TDS-418
12 1	Stop Bar	DJ-487	29 2	Bearing, Ball, Fafnir RAO10PP, wo/collar	TDS-419
13 1	Roller Chain, 5/8 P., 72 P.	DJ-488	30 4	Washer, 3/4 x $1\frac{1}{4}$ x 14 ga	TDS-420
14 1	Conveyor Pulley, Sprocket w/bearing, cup and cone	DJ-490	31 2	Bearing Cone LM-11949L w/seal	TDS-421
15 1	Bolt, 7/16 NF x $1\frac{1}{4}$	TDS-23	32 2	Bearing Cup, LM-11910	TDS-422
16 1	Bolt, 5/8 NF x $2\frac{1}{4}$	TDS-28	33 2	Washer, 7/8 x 1-3/4 x 18 ga	TDS-487
17 1	Nut, 7/16 NF	TDS-37	34 3	Washer, 7/16 Wrought	TDS-523
			35 1	Vee Belt, 5L590	TDS-544

Identify the part on the drawing pertaining to its assembly, find its number and look it up in the parts list. When ordering parts, give the part number, the full name of the part, and the quantity of parts wanted.

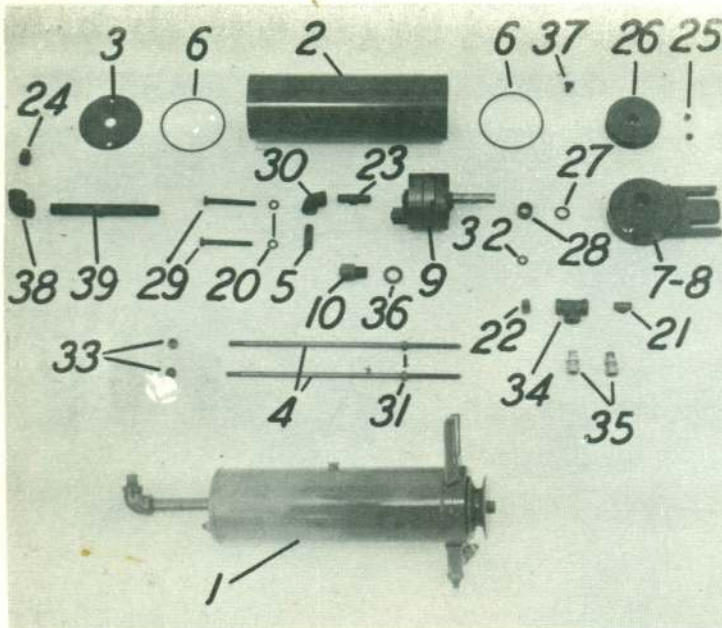


Index No.	No.	Req.	Description	Part No.	Index No.	No.	Req.	Description	Part No.
1	1		Pin, Cylinder Base	DJ-604	10	1		Knob, 1 $\frac{1}{4}$ dia. x $\frac{1}{4}$ NC	TDS-371
2	1		Valve Handle	DJ-610	11	1		Connector Link, A-2040	TDS-374
3	1		Pin, Piston Rod Anchor	DJL-2604	12	3		Hose, Hydraulic, 1/8NPTx16 male	TDS-407
4	3		Cotter Pin, 1/8 x 1	TDS-57	13	2		Bolt, 3/8 NF x 1	TDS-408
5	2		Cotter Pin, 3/16 x 1	TDS-61	14	4		Bolt, 5/16 NC x $\frac{1}{2}$	TDS-411
6	2		Lockwasher, 3/8	TDS-79	15	2		Hose, Hydraulic, 1/8NPTx4 male	TDS-443
7	4		Lockwasher, 5/16	TDS-107	16	1		Hose, Hydraulic, 1/8NPTx32 male	TDS-504
8	2		Washer, 3/8 Wrought	TDS-131	17	1		Vee Belt, 4L360	TDS-505
9	2		Street Ell, 3/8 NPT	TDS-231	18	2		Pipe Bushing, 3/8NPT to 1/8NPT	TDS-506



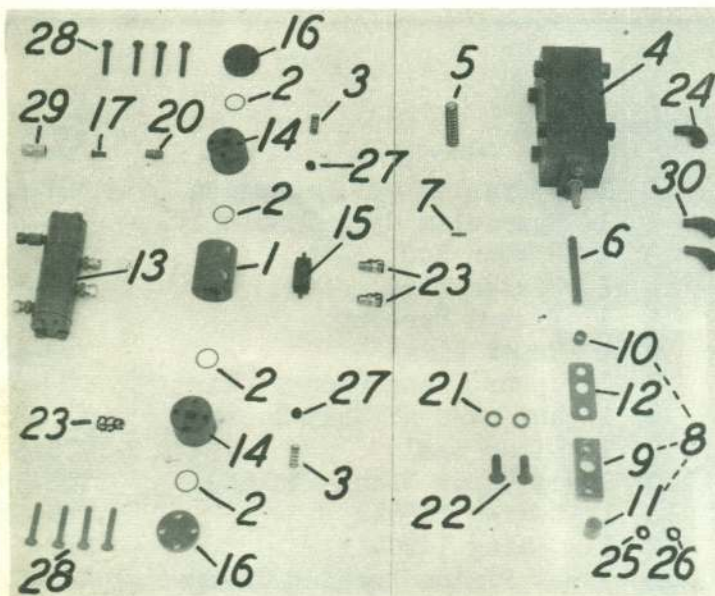
Index No.	No.	Req.	Description	Part No.
1	1		Hydraulic Cyl. complete	DJ-675
2	1		Hydraulic Cyl. Tube only	DJ-676
3	1		Piston Rod	DJ-677
4	2		Piston Disc	DJ-678
5	1		Piston Bushing	DJ-679
6	1		Upper Gland	DJ-680
7	1		Upper Gland Closure Ring	DJ-681
8	1		Nut, 5/8 NF Self-locking	TDS-436
9	1		Wiper Seal	TDS-507
10	1		set Upper Gland Packing	TDS-508
11	1		O-Ring 1866-2	TDS-509
12	1		O-Ring 1820-11	TDS-510
13	1		set Piston Packing Chevron	TDS-511
14	1		Retaining Ring	TDS-512

Identify the part on the drawing pertaining to its assembly, find its number and look it up in the parts list. When ordering parts, give the part number, the full name of the part, and the quantity of parts wanted.



Index No.	No.	Req.	Description	Part No.
	1	1	Pump, Complete	DJ-620
	2	1	Reservoir	DJ-621
	3	1	End Cap	DJ-622
	4	2	Stud	DJ-623
	5	1	Suction Tube	DJ-624
	6	2	Reservoir Gasket	DJ-625
	7	1	Pump Head- No Seal, No Brg.	DJ-627
	8	1	Pump Head- w/seal & Bearing	DJ-627A

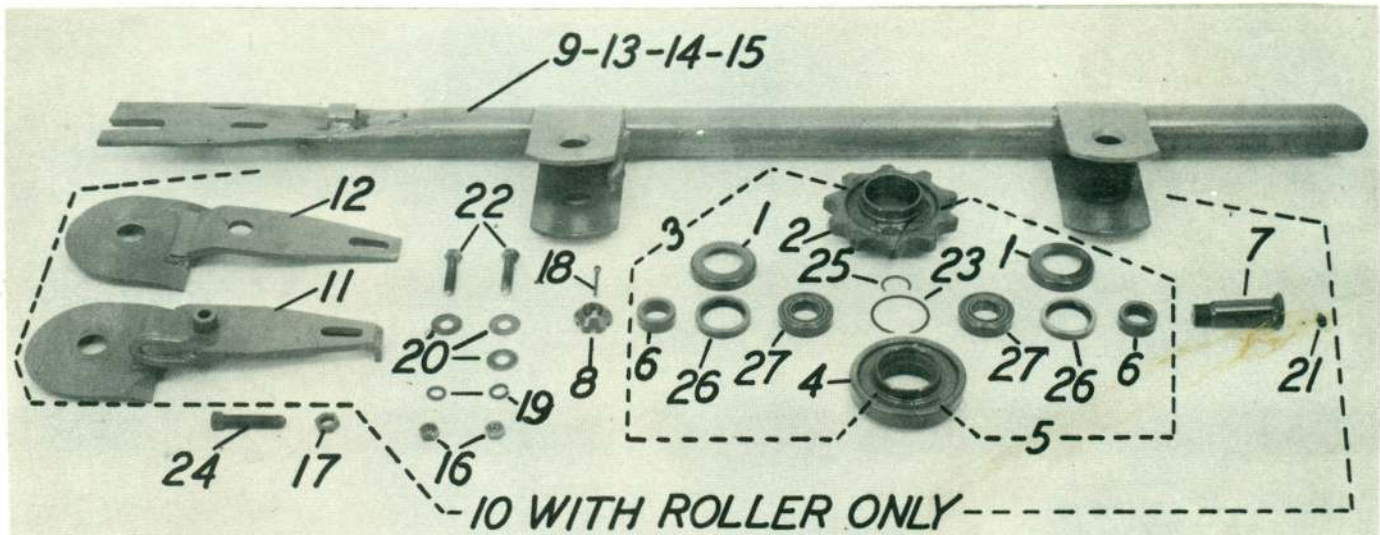
Index No.	No.	Req.	Description	Part No.
	9	1	Pump, w/relief set at 1700 psi	DJ-628
	10	1	Relief Valve, Set at 1700psi	DJ-629
	20	2	Lockwasher $\frac{1}{4}$	TDS-78
	21	1	Pipe Nipple, $\frac{1}{8}$ NPT, Close	TDS-95
	22	1	Pipe Plug, $\frac{1}{8}$ NPT, Sq. Hd.	TDS-136
	23	1	Pipe Nipple, $\frac{1}{8}$ NPT, Short	TDS-248
	24	1	Pipe Plug, $\frac{1}{4}$ NPT, Sq. Hd.	TDS-258
	25	2	Setscrew, $\frac{5}{16}$ NCx $\frac{5}{16}$ Socket drive	TDS-291
	26	1	Pulley, $\frac{1}{2}$ Bore, AS-25 Browning	TDS-397
	27	1	Grease Seal, Trostel EB-44-32-2	TDS-398
	28	1	Bearing, Needle Torrington B-88	TDS-399
	29	2	Bolt, $\frac{1}{4}$ NFx $2\frac{1}{4}$ H.T.	TDS-400
	30	1	Pipe Elbow, $\frac{1}{8}$ NPT, 90°	TDS-401
	31	2	Nut, $\frac{1}{4}$ NF	TDS-402
	32	1	Tetra Seal, $\frac{5}{16}$ OD x $\frac{1}{16}$ Cross section	TDS-403
	33	2	Nut, $\frac{1}{4}$ NF, #29EO48 Esna	TDS-404
	34	1	Pipe Tee, $\frac{1}{8}$ NPT	TDS-405
	35	2	Adapter Union, $\frac{1}{8}$ NPT, M-F	TDS-406
	36	1	Gasket, Relief Valve $\frac{9}{16}$ ID	TDS-488
	37	1	Vent, Breather	TDS-489
	38	1	Pipe Elbow, $\frac{1}{4}$ NPT, 90°	TDS-490
	39	1	Pipe Nipple, $\frac{1}{4}$ NPT x $3\frac{1}{2}$	TDS-491



Index No.	No.	Req.	Description	Part No.
	1	1	Body - Shuttle Spool	DJ-641
	2	4	Gasket Ring	DJ-644
	3	2	Check Ball Spring	DJ-647
	4	1	Valve, Complete, Less Elbows	DJ-650
	5	1	Valve Spring, Internal Part	DJ-656

Index No.	No.	Req.	Description	Part No.
	6	1	Valve Rod	DJ-657
	7	1	Valve Rod Pin, Internal Part	DJ-658
	8	1	Guide Block Group, Assembled	DJ-660
	9	1	Base Block	DJ-661
	10	1	Valve Rod Bushing	DJ-662
	11	1	O-Ring Cap	DJ-663
	12	1	Plate Gasket	DJ-664
	13	1	Shuttle Valve Complete w/fittings & restriction plug	DJ-670
	14	2	Body - Check Ball	DJ-671
	15	1	Shuttle Spool	DJ-672
	16	2	End Closure Disc	DJ-673
	17	1	Restriction Plug	DJ-674
	20	1	Pipe Nipple, $\frac{1}{8}$ NPT Close	TDS-95
	21	2	Lockwasher $\frac{5}{16}$	TDS-107
	22	2	Bolt $\frac{5}{16}$ NF x 1	TDS-338
	23	3	Adapter Union, $\frac{1}{8}$ NPT, M-F	TDS-406
	24	2	Street Ell, $\frac{1}{8}$ NPT x 90°	TDS-409
	25	1	O-Ring, 1820-7	TDS-438
	26	1	Tetra Seal, $\frac{3}{8}$ ID x $\frac{1}{16}$ Cross Section	TDS-439
	27	2	Ball, $\frac{3}{8}$ dia. Steel	TDS-445
	28	8	Bolt, $\frac{1}{4}$ NF x 2	TDS-448
	29	1	Adapter Union, $\frac{1}{8}$ NPT F-F	TDS-449
	30	2	Street Ell, $\frac{1}{8}$ NPT x 45°	TDS-492

BOOM & IDLER PARTS SECTION



Index No.	Description	Part No.	Index No.	Description	Part No.
1	Seal Guard	DJ-222	14	#30 Boom Weldment, no rollers or tail roller bracket.	DJ-2561
2	Boom Idler Sprocket, H.D. no bearings, etc.	DJ-2503	15	#20 Boom Weldment, no rollers or tail roller bracket.	DJ-2566
3	Boom Idler Sprocket, H.D. w/bearings, seals, seal guards, rings, etc.	DJ-2503A	16	Nut, $\frac{1}{2}$ NC	TDS-40
4	Boom Idler Roller, H.D. no bearings, etc.	DJ-2504	17	Nut, $\frac{5}{8}$ NC, Jam	TDS-46
5	Boom Idler Roller, H.D. w/bearings, seals, seal guards, rings, etc.	DJ-2504A	18	Cotter Pin, $\frac{1}{8}$ x $1\frac{1}{2}$	TDS-59
6	Seal Ring	DJ-2505	19	Lockwasher, $\frac{1}{2}$	TDS-82
7	Roller Shaft	DJ-2506	20	Washer, $\frac{1}{2}$ Wrought	TDS-83
8	Roller Shaft Nut	DJ-2507	21	Grease Fitting, $\frac{1}{4}$ SAE	TDS-93
9	#40 Boom Weldment, no rollers or tail roller bracket.	DJ-2511	22	Bolt, $\frac{1}{2}$ NC x $2\frac{1}{4}$	TDS-125
10	Tail Roller & Bracket Complete: includes bracket, rollers, bearings, seals, shaft, etc.	DJ-2531	23	Retaining Ring	TDS-284
11	Tail Roller Bracket, R.H. w/stone deflector	DJ-2542	24	Setscrew, $\frac{5}{8}$ NC x $3\frac{1}{2}$, square head	TDS-494
12	Tail Roller Bracket, L.H.	DJ-2543	25	Retaining Ring, XRO448 Nat.	TDS-495
13	#50 Boom Weldment, no rollers or tail roller bracket.	DJ-2556	26	Grease Seal, 244124 CR	TDS-496
			27	Bearing, Ball, Federal 1206 F or equivalent	TDS-497
			*	#20 Heavy Duty Boom Ass'y	DJ-2500A-20
			*	#30 Heavy Duty Boom Ass'y	DJ-2500A-30
			*	#40 Heavy Duty Boom Ass'y	DJ-2500A-40
			*	#50 Heavy Duty Boom Ass'y	DJ-2500A-50

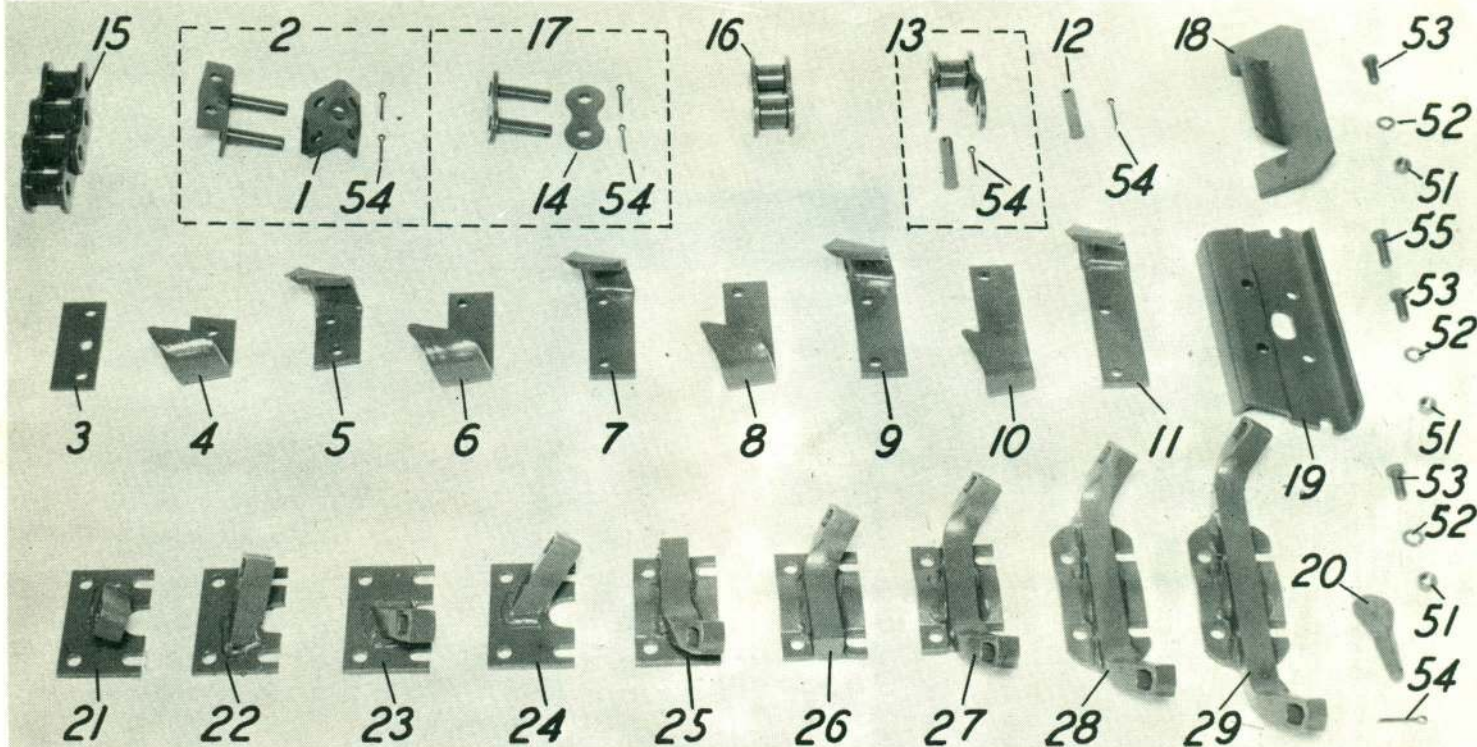
* Complete Assemblies (not shown): Includes Rollers, Tail Roller Brkt, Brgs, & Hdwe.

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CUTTER & CUTTER CHAIN PARTS



Index No.	Description	Part No.	Index No.	Description	Part No.
1	Angle Side Link only	DJL-2601	16	Roller Link, Cutter Chain	DJL-2608
2	Angle Side Link complete, includes 2 angle links, 2 pins, 2 cotter pins, assembled	DJL-2601A	17	Pin Link, Cutter Chain, made up of 2 side bars, 2 pins, 2 cotter pins, assembled	DJL-2609
3	Center Cutter Adapter Bar	DJL-2602	18	Cleaner Blade, 8"	DJ-2610-8
4	Center Cutter, RH	DJL-2603CR	18	Cleaner Blade, 10"	DJ-2610-10
4	Center Cutter, RH, hard faced	DJL-2603CRS	18	Cleaner Blade, 12"	DJ-2610-12
5	Center Cutter, LH	DJL-2603CL	19	Adapter, 10" and 12" Cutter	DJL-2611
5	Center Cutter, LH, hard faced	DJL-2603CLS	20	Chisel Cutter Bit, Hardened Steel	DJ-2651
6	4" Slicer Cutter, RH	DJ-2603-4R	20	Chisel Cutter Bit, Hard Surface, Hardened	DJ-2651S
6	4" Slicer Cutter, RH, hard faced	DJ-2603-4RS	21	Center Chisel Cutter Brkt RH	DJL-2675CR
7	4" Slicer Cutter, LH	DJ-2603-4L	22	Center Chisel Cutter Brkt LH	DJL-2675CL
7	4" Slicer Cutter, LH hard faced	DJ-2603-4LS	23	4" Chisel Cutter Bracket RH	DJ-2680R
8	6" Slicer Cutter, RH	DJ-2603-6R	24	4" Chisel Cutter Bracket LH	DJ-2680L
8	6" Slicer Cutter, RH hard faced	DJ-2603-6RS	25	6" Chisel Cutter Bracket RH	DJ-2685R
9	6" Slicer Cutter, LH	DJ-2603-6L	26	6" Chisel Cutter Bracket LH	DJ-2685L
9	6" Slicer Cutter, LH hard faced	DJ-2603-6LS	27	8" Chisel Cutter Bracket	DJ-2690
10	8" Slicer Cutter, RH	DJ-2603-8R	28	10" Chisel Cutter Bracket	DJ-2695
10	8" Slicer Cutter, RH hard faced	DJ-2603-8RS	29	12" Chisel Cutter Bracket	DJ-2698
11	8" Slicer Cutter, LH	DJ-2603-8L	*	Cutter Chain, 2½', no bolts	DJL-2600-20
11	8" Slicer Cutter, LH hard faced	DJ-2603-8LS	*	Cutter Chain, 3½', no bolts	DJL-2600-30
12	Pin, Cutter Chain	DJL-2604	*	Cutter Chain, 4½', no bolts	DJL-2600-40
13	Offset Link, Cutter Chain	DJL-2605	*	Cutter Chain, 5½', no bolts	DJL-2600-50
14	Side Bar, Pin Link	DJL-2606		* not illustrated	
15	3-Link Section, Cutter Chain made up of 2 roller links, 1 pin link, riveted	DJL-2607	51	Nut, 3/8 NF	TDS-35
			52	Lockwasher, 3/8	TDS-79
			53	Bolt, 3/8 NF x 7/8 H.T. Alloy	TDS-383
			54	Cotter Pin, 1/8 x 7/8 Alloy	TDS-384
			55	Bolt, 3/8 NF x 1-1/8 H.T. Alloy	TDS-503

Note: Above listed cutters & brackets do not include hardware.

ARPS CORPORATION, New Holstein, Wisconsin

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HOW TO USE HARD FACED CHISEL CUTTERS FOR
MAXIMUM TRENCH CUTTING PERFORMANCE.

Hard faced Chisel Cutters have only one surface hard faced, and it is discernible by the deposit thereon. The Cutter, therefore, has one hard side and one softer side.

There are two methods of use:

1. Having the hard faced side turned away from the trench bottom, thereby exposing the softer Cutter metal to wear against the trench bottom.

This generally produces the most satisfactory results by giving the maximum trench footage rate per hour in hard, abrasive soils.

As the softer cutter metal wears away, the hard metal tends to remain and produces an extremely sharp, hard cutting edge, which cuts away the hard soil rapidly.

2. Having the hard faced side turned toward the trench bottom, thereby subjecting the hard cutter material to the greatest wear by the trench bottom. While this may extend the hourly life of the cutter, the hourly trenching output rate is soon drastically reduced as the cutter becomes blunt. This method works well only where the spoil dirt is abrasive enough to produce a continually sharp cutter.

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This hand page is used for the purpose of giving a reply to the letter which has been received by the sender of the letter. It is used in the same manner as the other hand pages.

There are two methods of using it:

1. Having the hand page open, the letter is placed in the envelope, the letter is then placed in the envelope, the letter is then placed in the envelope.

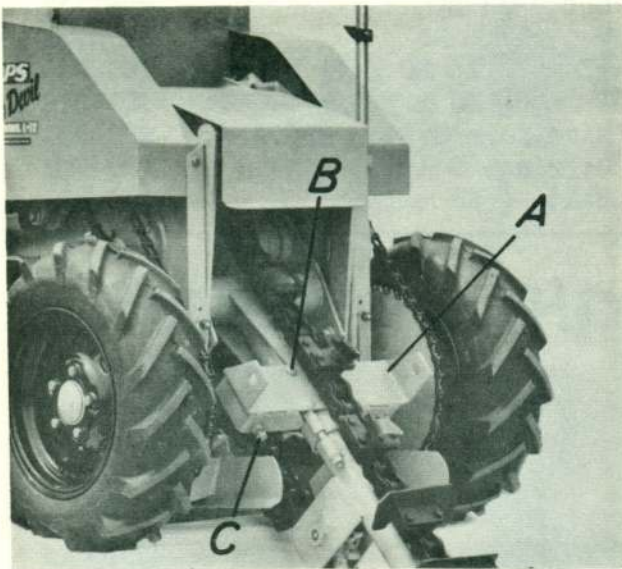
This method is used when the letter is to be sent by the sender of the letter. It is used in the same manner as the other hand pages.

As the sender of the letter is not present, the letter is placed in the envelope, the letter is then placed in the envelope, the letter is then placed in the envelope.

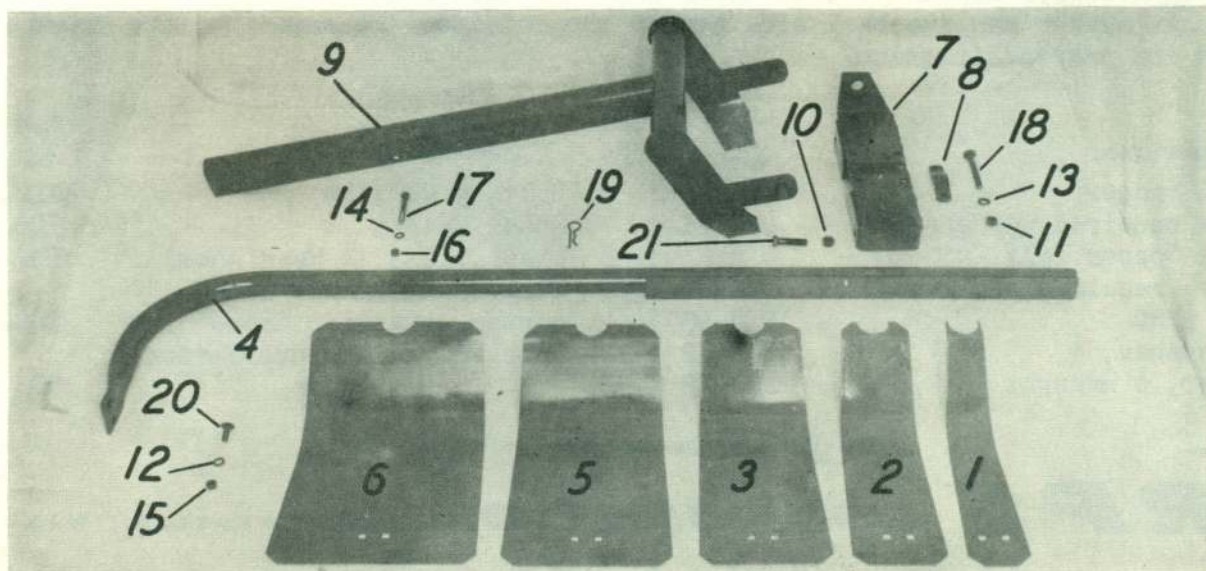
2. Having the hand page open, the letter is placed in the envelope, the letter is then placed in the envelope, the letter is then placed in the envelope.

CRUMBER ACCESSORY

FOR MODEL L-12 TRENCHER ONLY

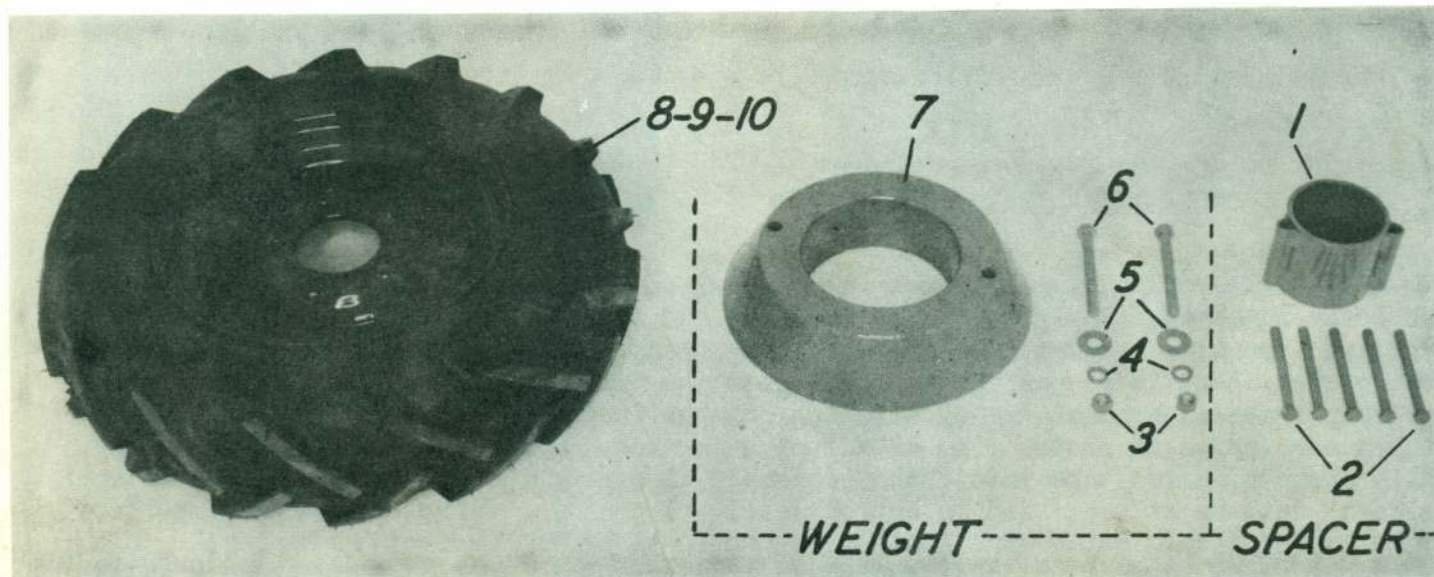


TO INSTALL CRUMBER - Place bracket "A" (above) on top side of boom socket just ahead of idler sprocket. Apply bolts "B" from top and clamp bar from bottom. Be sure adjusting screws "C" point to rear as shown. Clamp bracket tightly to boom socket, being sure that it is perfectly level with the machine from side to side. Hook crumber frame to bracket "A" by sliding crumber frame pins through holes in bracket in manner shown in photo. One of the pins is then locked by a hairpin type cotter. Slip crumber frame tube into channel member of crumber frame until crumber blade clears cutters at boom end by approximately 1 to 1½". Clamp crumber frame tube tightly in place, being sure that the crumber blade is perfectly upright. With trencher boom lowered to position where cutters just contact the ground, adjust screws "C" (both sides evenly) until all weight of the crumber is against them, but with crumber blade also just contacting the ground. When so adjusted, trencher boom may be raised or lowered with the chain in motion with a minimum of hooking danger. TO REMOVE CRUMBER - Merely pull out the hairpin cotter and slide crumber frame off bracket "A". Do not remove bracket "A". Note - Bracket "A" will lessen the height slightly to which the boom may be raised.



Index No.	Description	Part No.	Index No.	Description	Part No.
1	Crumber Blade, 4"	DJ-1001	11	Nut, $\frac{1}{2}$ NC	TDS-40
2	Crumber Blade, 6"	DJ-1002	12	Lockwasher, $\frac{3}{8}$	TDS-79
3	Crumber Blade, 8"	DJ-1003	13	Lockwasher, $\frac{1}{2}$	TDS-82
4	Crumber Frame Tube	DJ-1004	14	Lockwasher, $\frac{5}{16}$	TDS-107
5	Crumber Blade, 10"	DJ-1005	15	Nut, $\frac{3}{8}$ NC	TDS-117
6	Crumber Blade, 12"	DJ-1006	16	Nut, $\frac{5}{16}$ NC	TDS-214
7	Mounting Bracket	DJ-1101	17	Bolt, $\frac{5}{16}$ NC x $2\frac{1}{4}$	TDS-234
8	Clamp Strap	DJ-1121	18	Bolt, $\frac{1}{2}$ NC x $3\frac{3}{4}$	TDS-235
9	Crumber Frame	DJ-1201	19	Wire-form Cotter #2629	TDS-301
10	Nut, $\frac{1}{2}$ NF	DJ-1202	20	Carriage Bolt, $\frac{3}{8}$ NC x 1	TDS-427
		TDS-39	21	Bolt, $\frac{1}{2}$ NF x $1\frac{1}{2}$	TDS-493

DUAL WHEEL AND WEIGHT ACCESSORY



Extra Wheels, Spacers, and Weights may be set up as follows:

1. Dual wheels only.
2. Dual wheels with single weight on inside wheel only.
3. Dual wheels with single weight on outside wheel only.
4. Dual wheels with double weights; weight on inside and outside wheel.
5. Weight only on single wheel.

Note: Weight always assembles with taper end into back side of wheel. Outer wheel of duals always has its back side toward the outside. Be sure the tire tread runs in the proper direction.

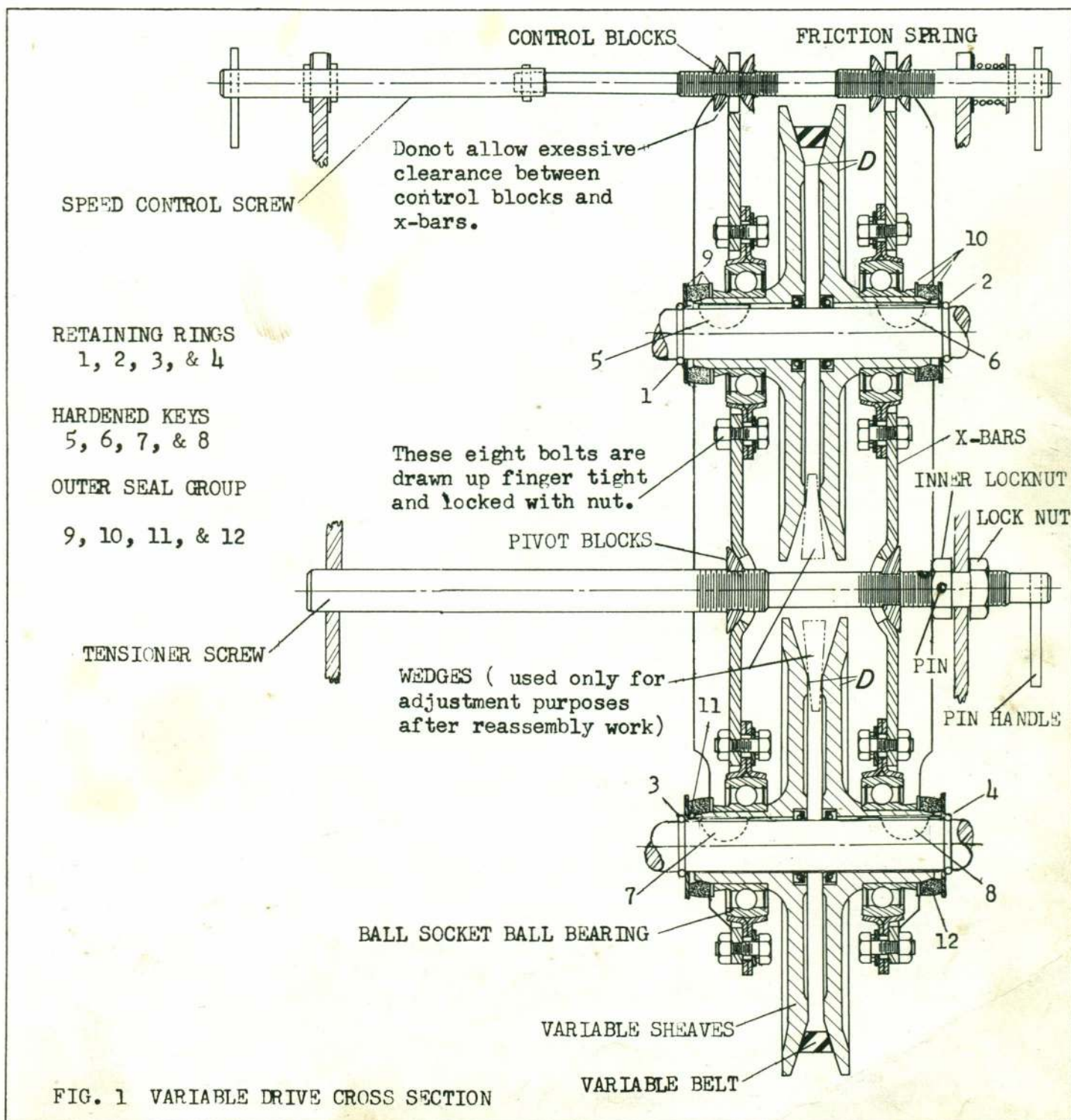
Index No.	Description	Part No.	Index No.	Description	Part No.
1	Wheel Spacer (One required per wheel)	DJ-521	6	Bolt, $\frac{1}{2}$ NC x $4\frac{1}{2}$	TDS-137
2	Wheel Spacer Bolt (Five required per wheel)	DJ-522	7	Wheel Weight	TDS-323
3	Nut, $\frac{1}{2}$ NC	TDS-40	8	Wheel, 12x5 JA Rear Wheel	TDS-324
4	Lockwasher, $\frac{1}{2}$	TDS-82	9	Tire, 6-12, 2 ply open center, traction tread	TDS-325
5	Washer, $\frac{1}{2}$ Wrought	TDS-83	10	Tube, 6-12, w/hydraflation valve	TDS-326

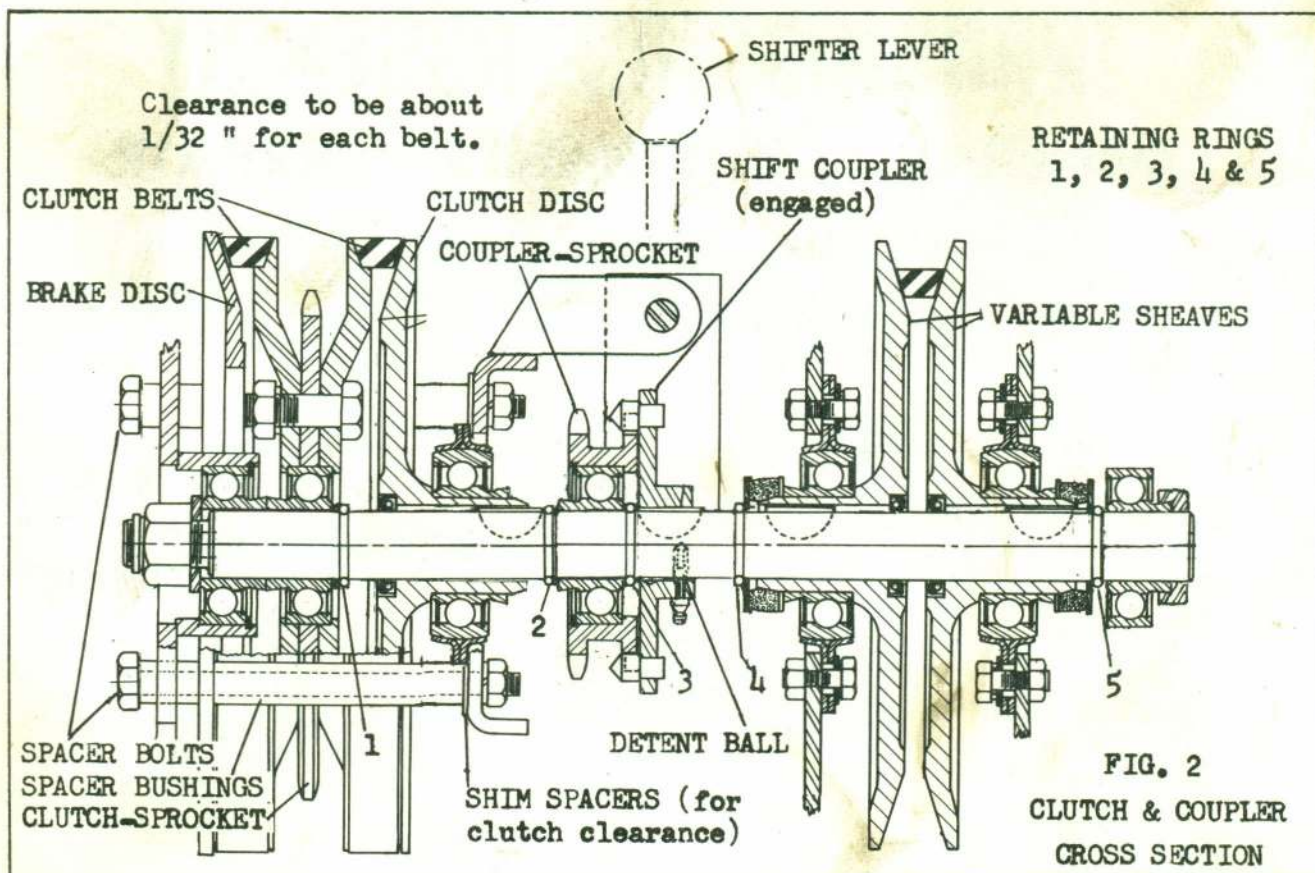
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TRANSMISSION ASSEMBLY

GENERAL ADJUSTMENTS - REPAIR

THE SPEED CONTROL TRANSMISSION SHOULD GIVE LONG SERVICE WITH A MINIMUM OF ATTENTION OTHER THAN LUBRICATION AND MINOR ADJUSTMENTS WHICH ENTAIL NO DISASSEMBLY WORK. WHEN DISASSEMBLY WORK IS NECESSARY, IT IS MOST CONVENIENT TO FIRST REMOVE THE UNIT FROM THE TRENCHER AND TAKE IT TO A WORK BENCH.





I. TO CHANGE THE VARIABLE DRIVE BELT

- a. Carefully lift Speed Control Screw, Fig. 1, out and put it aside so as not to disturb its present setting or adjustment.
- b. Loosen Locknut, Fig. 1, (Note - nut has left hand threads). Turn Tensioner Screw about 2 to 2½ turns counter clockwise. As you do this, force the belt into the Variable Sheaves, both upper and lower, to spread them apart. Do not allow Pivot Blocks to come out of their sockets, otherwise considerable extra adjusting will result.
- c. Remove Bolts "A" from Frame Plate, Fig. 4. Also remove Spacer Tube Bolts on same side. Remove Input Pulley and the two Nuts "B". Drive Pin Handle out of Tensioner Screw, Fig. 1, and remove Locknut.
- d. Drive Frame Plate off bearings.
- e. Replace Variable Belt and reassemble. Bolt Frame Plate tight, replace Locknut, and Pin Handle.
- f. Replace Nuts "B" and adjust so that the Brake Disc and Clutch Disc are well centered on Clutch-Sprocket and Clutch-Sprocket can spin without drag. Refer to Figures 2 and 4.
- g. Turn Tensioner Screw clockwise to draw Variable Sheave halves together, rotating them as you do this. Continue until new belt is firm in tension, but do not overtension. Lock with Locknut.
- h. Replace Speed Control Screw by carefully turning screw so that Control Blocks move uniformly apart or together until they drop into their notch in the X-bars. Next, carefully push or pull entire screw endways until it fits into the notch at the far end.
- i. Check the alignment of the upper and lower Variable Sheaves with a straight-edge. Use straightedge on front and back sides of sheaves. Sheaves should be within 1/32" or less of being exactly in line with each other on their center lines. For long belt life, do not allow any greater misalignment.

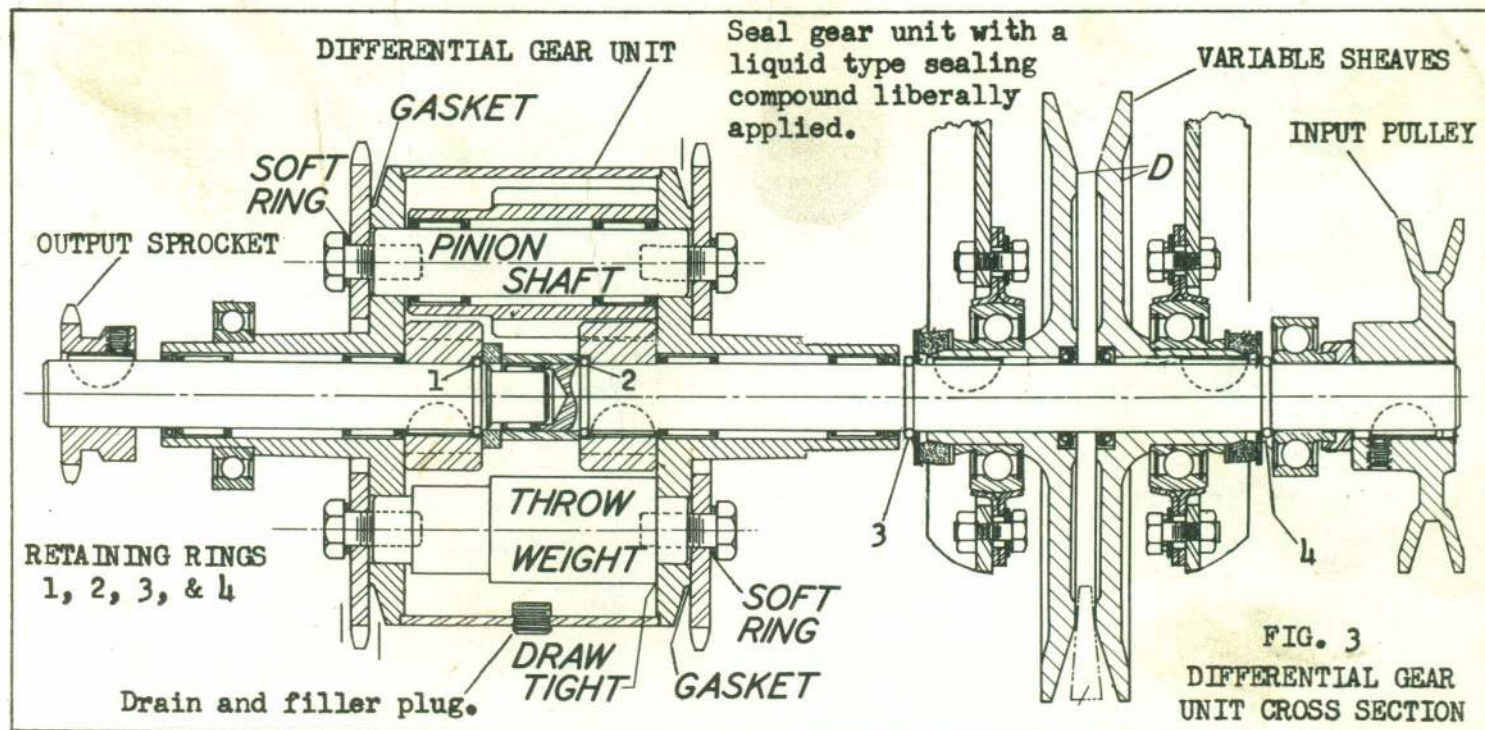


FIG. 3
DIFFERENTIAL GEAR
UNIT CROSS SECTION

2. TO ALIGN VARIABLE SHEAVES

- a. Remove Speed Control Screw.
- b. Screw Pivot Blocks apart until nearly at the end of the thread.
- c. Wedge the Variable Sheave apart (both the upper set and lower set) as far as they will go (about $7/16$ to $1/2$ inch) using a tapered piece of wood etc., for each. The sheave hubs will stop against Retaining Rings 1, 2, 3, and 4, Fig. 1. Leave wedges in place.
- d. Turn each Pivot Block individually up to its respective X-bar socket. Then turn Tension Screw to draw them into their respective sockets. Both Blocks should seat simultaneously at the bottom of their respective sockets. If not, advance the "tardy" block $1/2$ turn and try again.
- e. By using a straightedge to check, determine whether each upper and lower Variable Sheave side is exactly in line with its corresponding mate. If not, slightly loosen the wedges and work each outermost sheave in line with the other.
- f. Take Speed Control Screw and adjust it to fit in its proper place just as the X-bars are positioned now.
- g. The Variable Sheaves and their two adjusting screws are in proper adjustment. Tension the Variable Belt in accordance with line "g", section "1" above.

3. TO REPLACE VARIABLE SHEAVES

- a. Follow instructions of foregoing Section 1 through to and including line "e". Remove Variable Belt.
- b. Remove bearings from outer end of upper shaft, Fig. 2, and lower shaft, Fig. 3.
- c. Remove Retaining Rings "2" and "8", Fig. 1, and Seal Groups "10" and "12".
- d. Push Variable Sheaves against Retaining Rings "1" and "3" so that Hardened Keys "6" and "8" can be removed.
- e. Remove the Pin from the Inner Locknut. Remove the Locknut and Pivot Block.
- f. Carefully begin to slide the outer X-bar with its two Variable Sheave halves off the unit. Considerable resistance will be encountered as the opposed lip of the grease seal inside each sheave hub passes over the grease grooves of its shaft. Turning the sheaves as you pull them across will help.

- g. Slide the inner set of Variable Sheave halves and their X-bar off the unit. Less resistance will be encountered as their grease seals are not opposed to the direction of movement.
- h. Examine shafts for wear and pitting. Polish off any brownish deposit. Shaft diameters should not be less than .874 inches at the point of greatest wear, otherwise rapid sheave wear can be expected of the second set.
- i. Replace with new sheaves, unless shafts require replacing, by doing the reverse of the above procedure. Check the seals in the new sheave halves (new sheaves require new seals). Seal lips must point inward. Be sure Outer Seal Groups, Keys, and X-bar are in proper place and carefully work on the inner set of sheaves. Since these seal lips are opposed, considerable resistance will be met. Use care so as not to damage them. Outer sheave halves will slide on easily. Add keys, X-bar, Outer Seal Groups, Retaining Rings and Bearings.
- j. Put on Pivot Block with Inner Locknut and press pin into Tension Screw.
- k. Follow Section 1, from line "f" and all of Section 2 to align the Sheaves.

4. TO REPLACE CLUTCH BELTS

- a. Follow the instructions of foregoing Section 1 through to and including line "e". Remove the Variable Belt also.
- b. Remove the two Drive Chains.
- c. Remove the nut at the end of the upper shaft, Fig. 2, and the washer.
- d. Remove four Spacer Bolts, Fig. 2, noting the sequence and quantity of Spacer Bushings and Shim Spacers.
- e. Drive the Shaft out of its bearing. Brake Disc, Fig. 2, will fall free as will its Captive Belt. Pull off the Clutch-Sprocket and the second Captive Belt will be free.
- f. Replace Belts and reassemble, noting that Retaining Ring "1" has a beveled washer between it and the Clutch-Sprocket.
- g. When replacing Spacer Bolts, use only enough Shim Spacers so that Clutch-Sprocket can be centered with a very minimum of clearance for each Clutch Belt but yet will spin without any drag.
- h. Continue reassembling according to foregoing Section 1 from line "f" on. Align Variable Sheaves according to Section 2.

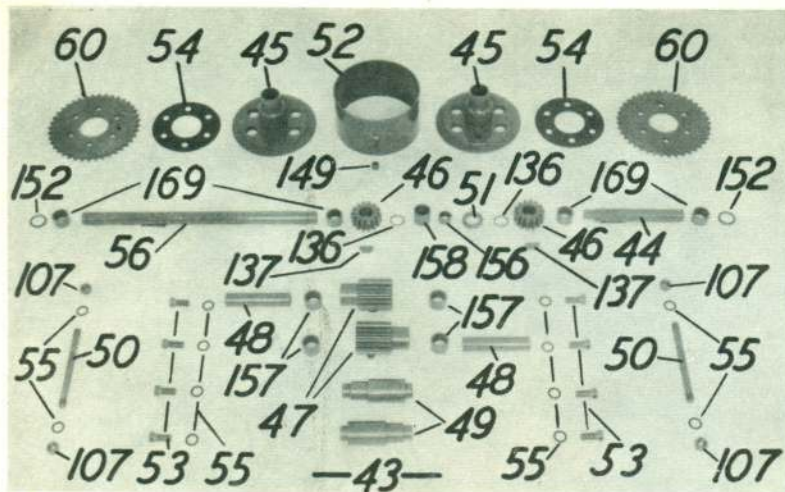
5. TO ADJUST CONTROL LINKAGE

The push-pull control linkage must be in such adjustment that the steering handle may be moved to either extreme position without preventing the clutch direction lever on the steering handle from properly engaging either clutch sufficiently to drive the machine. To do this, adjust yoke end that attaches to the Clutch Lever, Fig. 4. If Clutch Belt clearance becomes excessive, linkage may bottom without engaging clutches sufficiently to drive machine. Readjust according to Section 4, line "g" and Section 1, line "g".

6. DIFFERENTIAL GEAR UNIT

Throw Weight - This part has the same general configuration as the roller pinion with its shaft, except that it is solid. It is put into the gear box with its position matching the diagonally opposite roller pinion. One throw weight will be drawn up solid to one end of the gear box and the remaining throw weight is drawn up solid to the other end of the gear box.

Pinion Shaft - These shafts are drawn up solid to one end (either end of the gear box). These bolts should be wired.



Index No.	No.	Req.	Description	Part No.
	1	1	Spring Shift - Return	DJ-304
	2	1	Output Sprocket	DJ-322A
	3	1	Handle	DJ-7001A
	4	1	Push-Pull Rod, Forward	DJ-7004
	5	1	Spring, Belt Tension	DJ-7006
	6	1	Screw Extension Tube	DJ-7008
	7	1	Vee Pulley	DJ-7009
	8	4	Quadrant Pin	DJ-7010
	9	4	Quadrant Disc	DJ-7011
	10	2	Push Rod	DJ-7012
	11	1	Transfer Rod	DJ-7013
	12	1	Rivet Pin	DJ-7014
	13	1	Idler Pulley	DJ-7015
	14	1	Shim	DJ-7016
	15	1	Bearing Retainer	DJ-7017
	16	4	Keys, Hardened	DJ-7018
	17	1	Belt Tightener Bar	DJ-7020A
	18	3	Frame Space Tube	DJ-7021
	19	1	Idler Sprocket Spacer	DJ-7022
	20	1	Push-Pull Rod, Intermediate	DJ-7023
	21	4	Spacer Tube, Clutch, long	DJ-7024
	22	4	Spacer Tube, Clutch, short	DJ-7025
	23	1	Spring - Clutch retainer	DJ-7026
	24	1	Clutch Control Lever	DJ-7027
	25	1	Transport Handle, short	DJ-7030
	26	1	Transport Handle, long	DJ-7040
	27	1	Transmission complete	DJ-7100A
	28	1	Primary Input Chain, $\frac{1}{2}$ P., 67 P.	DJ-7101
	29	1	Secondary Input Chain $\frac{1}{2}$ P., 76 P.	DJ-7103
	30	1	Pivot Nut, Outer	DJ-7105
	31	1	Pivot Nut, Inner	DJ-7106
	32	4	Neoprene Seal	DJ-7108
	33	10	Flangette Stamping, Hardened	DJ-7109
	34	2	Variable Linkage Bar	DJ-7110
	35	2	Speed Control Nut, 7/16 NF	DJ-7111
	36	2	Speed Control Nut, $\frac{1}{2}$ NF, L.H.	DJ-7112
	37	1	Friction Spring	DJ-7113
	38	1	Adjusting Screw, lower	DJ-7119
	39	1	Speed Control Screw	DJ-7120
	40	1	Shift - Bearing Plate	DJ-7121
	41	1	Retainer Washer	DJ-7122
	42	5	Variable Sheave Disc	DJ-7123
	43	1	Differential Gear Unit	DJ-7200A
	44	1	Output Shaft	DJ-7202A

Index No.	No.	Req.	Description	Part No.
	45	2	Housing Bell	DJ-7204A
	46	2	Gear	DJ-7205
	47	2	Roller Pinion	DJ-7206
	48	2	Pinion Shaft	DJ-7207
	49	2	Throw Weight	DJ-7208
	50	2	Stud	DJ-7209
	51	1	Thrust Ring Bearing	DJ-7210
	52	1	Housing	DJ-7211
	53	8	Drilled Bolt, 7/16NF x1	DJ-7212
	54	2	Gasket Seal	DJ-7213
	55	12	Compression Seal	DJ-7214
	56	1	Input Shaft	DJ-7215
	57	1	Sprocket, Coupling	DJ-7302
	58	1	Brake Clutch Disc	DJ-7307
	59	2	Driven Clutch Disc	DJ-7308
	60	3	Plate Sprocket 40T	DJ-7309
	61	1	Detent Spring	DJ-7313
	62	1	Shaft, Upper	DJ-7320
	63	1	Shift Coupling	DJ-7321
	64	1	Frame Panel	DJ-7351
	65	1	Frame	DJ-7401
	101	1	Bolt, 5/8 NC x 3 $\frac{1}{2}$	TDS-12
	102	2	Bolt, $\frac{1}{4}$ NC x 1 $\frac{1}{4}$	TDS-17
	103	3	Bolt, 7/16 NF x 1 $\frac{1}{4}$	TDS-23
	104	4	Bolt, 3/8 NC x 7/8	TDS-33
	105	10	Nut, $\frac{1}{4}$ NC	TDS-34
	106	5	Nut, 3/8 NF	TDS-35
	107	7	Nut, 7/16 NF	TDS-37
	108	1	Nut, 5/8 NF	TDS-44
	109	2	Jam Nut, 5/8 NC	TDS-46
	110	4	Cotter Pin, 1/8 x 1	TDS-57
	111	2	Cotter Pin, 3/16 x 1	TDS-61
	112	10	Lockwasher, $\frac{1}{4}$	TDS-78
	113	6	Lockwasher, 3/8	TDS-79
	114	11	Lockwasher, 7/16	TDS-81
	115	1	Washer, $\frac{1}{2}$ Wrought	TDS-83
	116	5	Grease Fitting, 1/8 NPT	TDS-91
	117	6	Lockwasher, 5/16	TDS-107
	118	1	Nut, 5/8 NC	TDS-108
	119	6	Nut, 3/8 NC	TDS-117
	120	2	Washer, 3/8 Wrought	TDS-131
	121	1	Bolt, 5/8 NC x 2-3/4	TDS-138
	122	6	Nut, 5/16 NF	TDS-140
	123	8	Bolt, $\frac{1}{4}$ NC x 7/8	TDS-144
	124	6	Bolt, 7/16 NC x 1	TDS-163
	125	1	Nut, $\frac{1}{2}$ NF Self-locking	TDS-210
	126	-	Washer, 11/16x1 $\frac{1}{4}$ x10 ga	TDS-211
	127	-	Washer, 5/16 Wrought	TDS-212
	128	8	Washer, $\frac{1}{4}$ Wrought	TDS-221
	129	1	Bolt, 5/16 NC x 1-3/4	TDS-237
	130	4	Washer, 17/32x1-1/16 x 13 ga.	TDS-243
	131	2	Bearing, Ball, Fafnir RAO14PP w/collar	TDS-307
	132	3	Bearing, Ball, Fafnir RAO14PP wo/collar	TDS-307A
	133	2	Bolt, 5/16 NF x 1	TDS-338
	134	1	Bolt, 5/8 NF x 2	TDS-341
	135	2	Nut, 5/16 NC	TDS-353

Index No.	No. Req.	Description	Part No.
✓136	9	Retaining Ring, Nat. XRC-335	TDS-363
137	6	Woodruff Key #607	TDS-365
138	2	Retaining Ring, Eaton 1080	TDS-366
139	1	Plastic Knob, $\frac{1}{4}$ NCx $\frac{1}{4}$	TDS-371
140	1	Handle Bar Grip, Bicycle	TDS-372
✓141	1	Connector Link A-2040	TDS-374
142	1	Retaining Ring, 1-45/64x1-29/64x.042	TDS-418
143	1	Bearing, Ball, Fafnir RA010PP wo/collar	TDS-419
144	1	Nut, 5/8NF Self-locking	TDS-436
145	2	Setscrew, 5/16 NCx3/8 Socket Head	TDS-450
146	4	Bolt, 5/16 NF x $5\frac{1}{2}$	TDS-452
147	2	Carriage Bolt, 3/8NCx3/4	TDS-453
148	1	Nut, 5/8 NC, LH Thread	TDS-457
149	1	Pipe Plug, $\frac{1}{4}$ NPT Soc.	TDS-458
150	1	Washer, 5/8x $1\frac{1}{4}$ x18 ga.	TDS-459
151	4	Washer, $1\frac{1}{4}$ x1-7/8x18 ga.	TDS-460
152	2	Seal, Trostel B108-56-2	TDS-462
✓153	5	Seal, Trostel BRS120A-56-4	TDS-464
154	5	Bearing, Ball, Fafnir RA103PPB2, wo/collar	TDS-467

Index No.	No. Req.	Description	Part No.
155	1	Bearing, Fafnir 9107PP	TDS-468
156	1	Bearing, Torr. B-118	TDS-469
157	4	Bearing, Torr. B-1412	TDS-471
158	1	Sleeve, Torr. IR-1416	TDS-472
159	1	Sprocket, Aetna AG-2318	TDS-474
160	4	Roll Pin, $1/8$ x $3/4$	TDS-479
161	2	Roll Pin, $1/8$ x $1-3/4$	TDS-480
162	3	Roll Pin, $5/32$ x $5/8$	TDS-481
163	1	Roll Pin, $3/16$ x 2	TDS-482
✓164	2	V-Belt, 5L250	TDS-483
✓165	1	V-Belt, Goodyear B-38 Steel Cable	TDS-485A
166	4	Washer, $7/8$ x $1-3/4$ x18 ga.	TDS-487
167	1	Steel Ball, $\frac{1}{4}$ Dia.	TDS-513
168	1	Grease Fitting, $3/16$ Dr.	TDS-514
169	4	Bearing	TDS-515
170	1	V-Belt, 5L430	TDS-516
✓171	5	Roll Pin, $7/32$ x $3/4$	TDS-517
172	2	Roll Pin, $\frac{1}{4}$ x $1\frac{1}{4}$	TDS-518
173	1	Yoke End, $3/8$ NF	TDS-519
174	1	Retaining Ring 1-37/64x1-17/64x.062	TDS-520
175	2	Bolt, $7/16$ NF x $3/4$	TDS-521
176	1	Nut, $5/8$ NC Slotted L.H. Thread	TDS-522

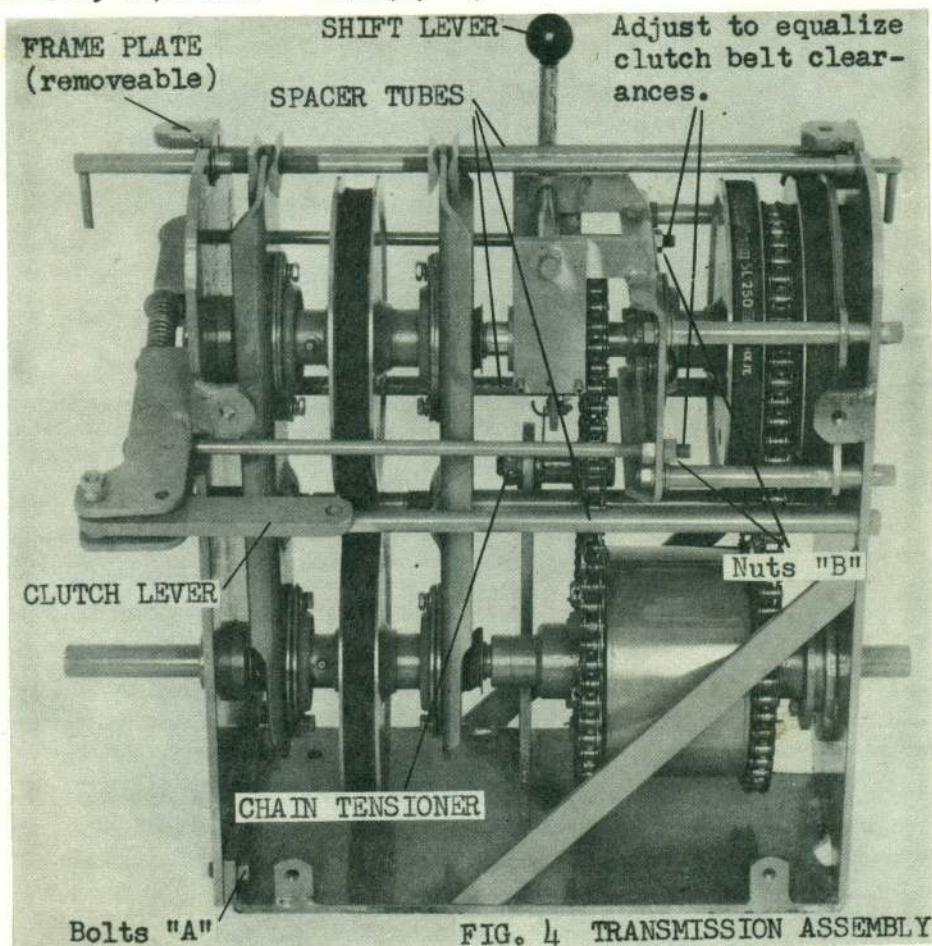


FIG. 4 TRANSMISSION ASSEMBLY

